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ANNOUNCEMENT

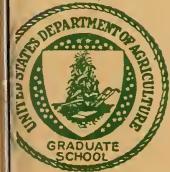
of the

GRADUATE SCHOOL

1943-1944



Education and Training by and for Federal Employees



United States Department of Agriculture
GRADUATE SCHOOL—WASHINGTON
JANUARY 1, 1944

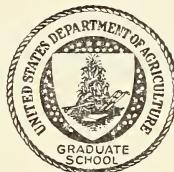
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This announcement covers fall and spring semesters; separate announcements are issued for the war training program and the summer semester.
See the Graduate School calendar for dates.

UNITED STATES DEPARTMENT OF AGRICULTURE
GRADUATE SCHOOL

ANNOUNCEMENT



1943-1944

GRADUATE UNDERGRADUATE NON-ACADEMIC
OPPORTUNITIES FOR CONTINUATION STUDY
IN THE FEDERAL SERVICE

WASHINGTON
JANUARY 1, 1944

Graduate School Calendar 1943-1944

1943

September 6, Monday—Registration opens.
September 27, Monday—Fall semester begins.
October 9, Saturday—Last day of registration without payment of late registration fee.
October 9, Saturday—End of refund period.
November 25, Thursday—Thanksgiving; holiday.
December 24, Friday—Beginning of Christmas holidays.

1944

January 3, Monday—End of Christmas holidays.
January 10, Monday—Registration for second semester opens.
January 21, Friday—Close of fall semester.
January 31, Monday—Second semester begins.
February 12, Saturday—Last day of registration without payment of late registration fee.
February 12, Saturday—End of refund period for spring semester.
March 6, Monday—Registration for war-training courses opens.
April 3, Monday—War-training courses begin.
April 15, Saturday—End of refund period for war-training courses.
May 8, Monday—Registration for summer courses opens.
May 19, Friday—Close of second semester.
June 5, Monday—Summer courses begin.
June 10, Saturday—Last day of registration for summer courses without payment of late registration fee.
June 17, Saturday—End of refund period for summer courses.
July 8, Saturday—End of war-training courses.

THE GRADUATE SCHOOL

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MILDRED V. MORRIS, Office Assistant
MARY E. SMITH, Office Assistant

CHAIRMEN OF GRADUATE SCHOOL DEPARTMENTAL COMMITTEES

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JAMES F. GRADY, A.B.....Department of Office Techniques and Operations
CHARLES E. KELLOGG, Ph.D.....Department of Physical Sciences
LEON O. WOLCOTT, Ph.B., LL.B.....Department of Public Administration
CHARLES F. SARLE, Ph.D.....Department of Social Sciences

Business Office—Room 1031 South Agriculture Building
Between 12th and 14th on Independence Avenue, SW.

Hours—8:40 A.M. to 6:20 P.M. (1 P.M. Saturday)
Telephone—Republic 4142, Extension 5943

Faculty¹

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¹ Listed by departments (with the exception of lecturers), alphabetically.

² USDA—United States Department of Agriculture.

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¹ FDA—Food Distribution Administration.

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WARD W. FETROW, Ph.D., Associate Chief, Cooperative Research and Service Division, Farm Credit Administration, USDA

FRED L. GARLOCK, Ph.D., Principal Marketing Specialist, Commodity Credit Corporation, USDA

WESLEY M. GEWEHR, Ph.D., Chairman, Department of History, University of Maryland

R. V. GOGATE, M.Ed., Agricultural Economist, Division of Foreign Agricultural Research, Office of Foreign Agricultural Relations, USDA

WYLIE D. GOODSELL, Ph.D., Senior Agricultural Economist, Bureau of Agricultural Economics, USDA

MARK GRAUBARD, Ph.D., Director of Labor Education, Nutrition and Food Conservation Branch, FDA, USDA

PHILIP LEONARD GREEN, Latin American Specialist, Office of Foreign Agricultural Relations, USDA

VICTOR I. GRUBER, Senior Rate Analyst, Office of Defense Transportation

WILLIAM T. HAM, Ph.D., Principal Agricultural Economist, Bureau of Agricultural Economics, USDA

T. SWANN HARDING, B.S., Senior Information Specialist, Office of Information, USDA

HAROLD HEDGES, M.S., Acting Chief, Cooperative Research and Service Division, Farm Credit Administration, USDA

DONALD C. HORTON, Ph.D., Senior Agricultural Economist, Bureau of Agricultural Economics, USDA

SHERMAN E. JOHNSON, Ph.D., Head, Division of Farm Management and Costs, Bureau of Agricultural Economics, USDA

V. WEBSTER JOHNSON, Ph.D., Acting Head, Division of Land Economics, Bureau of Agricultural Economics, USDA

E. LOWELL KELLY, Ph.D., Lieutenant Commander, Division of Aviation Medicine, Bureau of Medicine and Surgery, Navy Department

FREDERIC B. KNIGHT, Ph.D., Director, Division of Education and Applied Psychology, Purdue University

EARL G. LATHAM, Ph.D., Administrative Analyst, Bureau of the Budget

CHARLES P. LOOMIS, Ph.D., Senior Social Scientist, Bureau of Agricultural Economics, USDA

SIDNEY L. MILLER, Ph.D., Assistant to Deputy Director, Office of Defense Transportation; on leave from University of Iowa (Professor of Transportation)

S. R. NEWELL, M.A., Assistant Deputy Director, FDA, USDA

ARTHUR RAPER, Ph.D., Senior Social Science Analyst, Bureau of Agricultural Economics, USDA

FLOYD M. RIDDICK, Ph.D., Legislative Analyst, U. S. Chamber of Commerce

LEOPOLDO T. RUIZ, Ph.D., Economic Analyst, Board of Economic Warfare

CHARLES F. SARLE, Ph.D., Executive Assistant for Scientific Services, Weather Bureau

ASHLEY SELLERS, S.J.D., Associate Solicitor, in Charge of Food Distribution, Office of the Solicitor, USDA

T. LYNN SMITH, Ph.D., Senior Agricultural Analyst, Department of State; on leave from Louisiana State University (Professor and Head of Department of Rural Sociology)

HAMILTON K. SNELL, Ph.D., Head Program Specialist, Division of Materials and Equipment, Office of Defense Transportation; on leave from University of Southern California (Associate Professor of Transportation)

CONRAD TAEUBER, Ph.D., Statistical Analyst, Office of the Chief, Bureau of Agricultural Economics, USDA
 AFIF I. TANNOUS, Ph.D., Associate Social Science Analyst, Office of Foreign Agricultural Relations, USDA
 CARL C. TAYLOR, Ph.D., Head, Division of Farm Population and Rural Welfare, Bureau of Agricultural Economics, USDA
 VALERY J. TERESHTENKO, E.E., Economist, Program Analysis and Appraisal Branch, FDA, USDA
 FREDERICK L. THOMSEN, Ph.D., Head, Division of Marketing and Transportation Research, Bureau of Agricultural Economics, USDA
 JOHN F. TIMMONS, M.A., Agricultural Economist, Bureau of Agricultural Economics, USDA
 I-MIEN TSIANG, Ph.D., Associate Economic Analyst, Board of Economic Warfare
 VICTOR N. VALGREN, Ph.D., Principal Agricultural Economist, Farm Credit Administration, USDA
 ALBERT VITON, Ph.D., Chief, Coordination and Appraisal Division, FDA, USDA
 MAX J. WASSERMAN, Docteur ès Sciences Economiques, Chief, Blockade Enforcement Unit, Board of Economic Warfare
 FREDERICK V. WAUGH, Ph.D., Chief, Program Analysis and Appraisal Branch, FDA, USDA
 MICHAEL T. WERMEL, Ph.D., Chief, Economic Studies Unit, Bureau of Old Age and Survivors Insurance, Social Security Board
 CLAYTON E. WHIPPLE, M.S., Senior Agricultural Economist, Office of Foreign Agricultural Relations, USDA
 G. LLOYD WILSON, Ph.D., Director, Division of Rates, Office of Defense Transportation; and Professor of Transportation and Public Utilities and Director, Bureau of Public Affairs, University of Pennsylvania
 JOHN W. WRIGHT, Ph.D., Chief, Research and Testing Division, FDA, USDA
 JOSEPH G. YOSHIOKA, Ph.D., Director, Oriental Science Literature Service, American Documentation Institute
 OSCAR ZAGLITS, Doctor Rerum Politicarum, Senior Agricultural Economist, Office of Foreign Agricultural Relations, USDA
 DAVID ZISKIND, Ph.D., Director, Labor Requirements Section, Office of Civilian Requirements, War Production Board

LECTURERS

MARY A. BRADLEY, M.A., Bibliographical Editor, Office of Information, USDA
 E. FORREST CRITCHLOW, Chief, Vibration and Control Unit, Civil Aeronautics Administration
 KENNETH S. CULLOM, B.S. in M.E., Fuels and Lubricants Specialist, Civil Aeronautics Administration
 JEANNE ERLANGER, A.B., Personnel Officer, Employee Relations Branch, Office of Price Administration
 LOUIS H. FRANKEWICH, LL.B., Assistant Chief, Business Service Division, Office of Civilian Defense
 J. P. JOHANSSON, Head Photographer, War Department
 FALEA L. JOHNSON, M.S., Associate Editor, Office of Information, USDA
 JOSEPH KNAPP, Ph.D., Principal Agricultural Economist, Farm Credit Administration, USDA
 WILLIAM A. LUSBY, Engine Specialist, Civil Aeronautics Administration
 RICHARD W. MAYCOCK, A.B., Assistant Director, Office of Budget and Finance, USDA
 ROY E. MILLER, B.S., Chief, Editorial Section, Office of Information, USDA
 JOHN C. MORSE, B.S., Chief, Propeller Unit, Civil Aeronautics Administration
 DAVID L. POSNER, B.M.E., Installation Specialist, Civil Aeronautics Administration
 H. STEWART POTTER, Printing Production Manager, Office for Emergency Management
 JAMES E. SCOTT, Assistant Chief, Division of Estimates, Bureau of the Budget
 CHARLOTTE L. WHITE, M.A., Associate Editor, Office of Information, USDA
 FRANK H. WILDUNG, Photographer, National Geographic Society

General Information

HISTORY AND OBJECTIVES

The Graduate School was established by Secretary Henry C. Wallace in 1921 to stimulate and encourage post-entry education and to afford opportunities for the education and training of employees of the Department of Agriculture. It is a self-supporting, non-profit institution. Its courses are open, however, to all qualified Federal employees, for whom it constitutes a center of learning after official working hours. In fulfilling the purpose for which it was established, the School now offers a wide variety of courses ranging from the relatively elementary to the most advanced opportunities for continuation study. Last year more than 6500 individuals, representing every agency of the Federal Government, were enrolled in these courses. These courses are given in the buildings of the Department of Agriculture.¹

In its 22 years experience in meeting the changing educational needs of Federal employees, the School has become a unique educational institution combining, in effect, a graduate school, an in-service training institute, and an adult education organization. These three functions are implicit in the major objectives of the School:

1. "To supplement in-service training programs, conducted on government time and at government expense, by making it possible for employees to train themselves both intensively and extensively for proficiency in their present positions and for advancement to better positions.
2. To make available to career employees the opportunity to advance educationally, continuously, and progressively, as they advance in job proficiency and responsibility.
3. To provide graduate education acceptable in graduate institutions for the convenience of employees who desire advanced degrees but find it difficult, both for personal and official reasons, to complete all study in residence at the degree-granting institution.
4. To provide certain cultural, creative and leisure-time opportunities for employees.
5. To assure the attainment of these objectives by making available to employees the experience, knowledge, and instructional talent of outstanding specialists in the Federal service."²

In carrying forward these objectives, the emphasis of the School is on functional education, on people rather than on things. The School is dedicated to meeting the real needs of employees and centers its attention on the human element in the educational process—on students and faculty. Enrollment, organization, physical facilities, and related factors receive due but secondary emphasis.

The School operates in the conviction that study-experience and work-experience can be combined to the advantage of both; work-experience accelerates and gives meaning and motive to the learning process, study-experience improves and supplies understanding and competence to the work situation.

AUTHORITY

Facilities for study and research in the government departments are made available by Congressional authority to qualified individuals, students, and graduates of institutions of learning in the several States and

¹ See sketch of Administration and South Buildings on outside back cover.

² Quoted from the United States Department of Agriculture, "Regulations Governing the Graduate School Promulgated Pursuant to the Authority Contained in the Act of April 12, 1892, and the Deficiency Act of March 3, 1901 (20 U.S.C. Sec. 91)."

the District of Columbia under such rules and restrictions as the heads of departments and bureaus may prescribe (Joint Res. April 12, 1892, 27 Stat. 395; Deficiency Act of March 3, 1901, 31 Stat. 1010, 1039). Under this authority and the provisions of the Organic Act of the Department, the Graduate School was organized in 1921 with the approval and encouragement of the Secretary of Agriculture. A summary of regulations governing the Graduate School was promulgated by the Department on February 9, 1943.

ADMINISTRATION

The School receives no Federal funds. Its government is vested in the General Administration Board, appointed by the Secretary. Its administration is vested in the Director, appointed by the Board, and a small administrative staff. These have the advisory assistance of eight committees named by the Board, one for each of the major divisions of the School. Members of the Board and of the committees serve without compensation.

ROLE IN THE DEPARTMENT

The Graduate School makes an extensive contribution to morale and competence among employees of the Department of Agriculture; otherwise, there would be no reason for its continuation. It contributes to progressive personnel administration by supplying means of securing more efficient service through opportunities to escape blind-alley positions, to prepare for promotions, to find creative after-hours outlets, to escape from office routines, to cultivate genuine interests, to gain self-improvement, to find intellectual challenges equal to one's capacity, to keep abreast of an entire field or series of fields of knowledge when the daily job may require knowledge of only one small segment of a single field, and to understand and appreciate relationships between one's own special task and the tasks of others. The relation of this program to Departmental management is recognized by Secretarial Memorandum, which names the Director of Personnel of the Department as chairman of the General Administration Board of the School.

The School also serves the Department in supplementing in-service training programs, elaborating upon them, and carrying on from the points at which they stop. While training conducted on government time is likely to be confined to immediate needs and to knowledge and skills that will give fairly definite and tangible returns to the Government, the Graduate School can and does offer training opportunities no less vital to the Government but vital in a more indirect, long-run, and often intangible manner. It supplies opportunities that training officers, for financial and many other administrative reasons, are not able to make available at government expense and on government time. While in-service training programs give primary, if not exclusive, attention to training needs as seen by management, the Graduate School can and does respond to the needs and desires of the employees, many of whom seek to prepare themselves for promotional opportunities entirely beyond the interest and juris-

dition of the training officers of the agencies in which the employees are located. By close cooperation between (1) official in-service training provided by the Office of Personnel and by administrations, bureaus, and offices, and (2) semi-official after-hours training provided by the Graduate School, the training and educational program of the Department of Agriculture as a whole is made more comprehensive, flexible, and responsive to the needs both of employees and of management.

THE CURRICULUM

The curriculum includes fall, spring, and summer semesters. For the past two years it has also included, and will include for the duration of the war, a special one-semester war-training program beginning in April. This announcement covers fall and spring semesters; special announcements are issued for the summer semester and for the war-training program.

CORRESPONDENCE COURSES

In an effort to help meet needs and interests of personnel outside Washington, several correspondence courses are offered in subjects that lend themselves to this medium of education and training, and in which management and employees have indicated need and interest. These courses are open only to employees of the Department, including those on military furlough. These courses are highly personalized. They may be entered at any time during fall or spring semesters; they must be completed within one year after registration. A comprehensive written examination is given at the close of each course, under a local proctor. All courses carry the type and amount of credit indicated in the course description.

Where circumstances warrant, the Graduate School supplements the instruction by local supervision. Department agencies and employees interested in this provision, or in courses not now offered, are invited to write for further information.

Many correspondence courses are offered by the extension divisions of universities and colleges. Employees interested in particular courses are invited to write the Graduate School for information as to which institution offers the courses desired. Employees on military furlough should write directly to the newly-created United States Armed Forces Institute, Madison, Wisconsin.

LECTURES AND PUBLICATIONS

As usual, at least one lecture series dealing with a major current problem will be offered this year. The detailed program will be made available by special announcement. Several of the lectures of previous years, and a few other valuable works, are available as Graduate School publications. (See list on inside back cover.)

PLANNING YOUR PROGRAM—COUNSELING RESOURCES

Counseling at time of registration. For consultation on courses and programs of study, representatives of the major departments of the School will be available in the School offices from September 20 to October 1, 1943 (after 5:30 p.m.) and from January 24 to February 4, 1944 (after 5:30 p.m.). Students who wish credit certified to a college or university should, whenever possible, arrange their programs with the institution to which credits are to be sent. Graduate programs should be arranged in advance through the dean of the graduate school of the institution from which the degree is contemplated. The latest catalogs of colleges and universities are available for examination in the Graduate School office. Officers of the School and instructors will be glad to assist students in planning programs.

General counseling by major fields of work and study. To aid students in planning their education and training, the following Departmental Educational Counselors have been designated by the Department of Agriculture in as many major fields of study and work. These men and women, outstanding in their respective fields, serve also as members of the departmental committees of the Graduate School and are available to students from outside the Department of Agriculture. They are always available for consultation on educational plans, whether to be pursued in the Graduate School or in other institutions.

<i>Animal Sciences</i>	<i>Home Economics</i>	<i>Physical Sciences</i>
BENJAMIN SCHWARTZ	HAZEL STIEBELING	(other than Chemistry)
<i>Chemistry</i>	<i>Information and Public Relations</i>	CHARLES E. KELLOGG
O. E. MAY	DEWITT C. WING	<i>Plant Sciences</i>
<i>Economics</i>	<i>Language Aids</i>	HOMER L. SHANTZ
ERIC ENGLUND	RALPH R. SHAW	<i>Public Administration</i>
<i>Engineering and Mechanical Arts</i>	<i>Law</i>	VERNE B. LEWIS
MARSHALL S. WRIGHT	ASHLEY SELLERS	<i>Sociology</i>
<i>Entomology</i>	<i>Office Skills</i>	CONRAD TAEUBER
F. C. BISHOP	HENRY A. DONOVAN	<i>Statistics</i>
		A. E. BRANDT

Counseling service for only Department of Agriculture employees—in Washington and the field. Each bureau and office of the Department of Agriculture has designated an educational counselor to advise with its own employees. The names of these counselors can be secured from the bureau or office in question; field employees are advised to address their educational counselor in care of their organization.

FACULTY

The Graduate School faculty is drawn almost entirely from the Federal service, a source of talent and expertness unexcelled anywhere in the nation. There is but one criterion for its selection—competence. Faculty members combine excellent academic training, college-teaching experience, and daily practice in the application of the subject matter taught. The only exception to this pattern of qualifications is found in a few cases obviously requiring greater emphasis on technical experience than on academic background.

CERTIFIED STATEMENTS OF ACCOMPLISHMENT

In three fields—statistics, public administration, and accounting—the Graduate School offers Certified Statements of Accomplishment upon the student's completion of a specified program of study. (For complete details see the Departments of Public Administration and Mathematics and Statistics). These Statements are offered to encourage the student to complete a well-rounded approach to his chosen field of study and work, so that he may more competently discharge his present and prospective responsibilities as a public servant.

LIBRARY FACILITIES

The Department of Agriculture Library, containing approximately half a million books, is open to Graduate School students from 8:30 a.m. to 8:30 p.m. Through that Library, the School also has ready and convenient access to unexcelled special libraries. For field employees enrolled in correspondence courses, the facilities of the new branches (at Atlanta, Albuquerque, Beltsville, Fort Worth, Lincoln, Little Rock, Milwaukee, Portland, San Francisco, and Upper Darby) of the Department Library are available, and are stocked with reference materials for the courses listed.

LIBRARY ASSISTANTSHIPS

A limited number of library assistantships are open to qualified students from the Department of Agriculture who wish to use this method of paying their fees. All work is done after official hours. Students interested should inquire at the School Office.

FELLOWSHIPS FOR CITIZENS OF THE OTHER AMERICAN REPUBLICS

During 1942-43 the Department of Agriculture, in cooperation with the Department of State and the Office of Inter-American Affairs, provided to sixty representatives of the other American republics graduate fellowship opportunities for study, observation, and training in the improvement of agriculture and of living conditions in the Americas. In 1943-44 a much larger group of fellows will come to this country, through the cooperation of the Department of State, to study various phases of agriculture, economics, and engineering in the United States. The program is designed to provide additional training for serious, competent scientists and engineers. Its aim is to develop public-minded leaders who are able to carry full public and professional responsibilities.

The agencies that carry on this program in the Department and through which the fellowships are available include: Bureau of Agricultural and Industrial Chemistry (Agricultural Research Administration), Bureau of Agricultural Economics, Extension Service, Rural Electrification Administration, and Soil Conservation Service. The program is administratively correlated by the Office of Foreign Agricultural Relations. 1943-44 fellowships include those in rural electrification, agricultural harvesting and processing (production and processing of edible oils; fibers

and fiber processing; food processing and preservation; farm machinery; grain storage); agricultural economic research; agricultural program formulation and administration; agricultural census; rural sociology; and extension education.

The Graduate School cooperates in this undertaking through graduate fellowships to all of these fellows from the other American republics. The School also participates in the departmental committee that formulates the over-all programs for this group.

NATIONAL INSTITUTE OF PUBLIC AFFAIRS

The National Institute of Public Affairs works with colleges and universities in this country and Federal departments and agencies in Washington in providing annually a nine-month internship program for a group of college graduates, competitively selected from the country at large, partly in administrative and political leadership and partly in research. The Department of Agriculture for several years has cooperated in this undertaking by furnishing selected training opportunities for trainees from the Institute. The Graduate School cooperates with the Institute through graduate fellowships available to interns working in the Department of Agriculture or in other Federal departments and agencies.

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Attendance at the Graduate School is a privilege and not a right. The Graduate School reserves the right to cancel any course if registration does not warrant continuance; to make any changes deemed advisable in registration and in fees; to require the withdrawal of any student at any time for such reasons as the School deems sufficient.

Regulations and Procedures

The twenty-second year of the Graduate School opens on Monday, September 27, 1943. The first semester continues until Friday, January 21, 1944 inclusive. The second semester opens on Monday, January 31, 1944 and continues until Friday, May 19, inclusive. Information concerning the 1944 war-training program and summer semester is listed on page 15.

ADMISSION

Admission to resident courses in the Graduate School is open to all qualified employees in the Federal service, and to such other qualified individuals as facilities will permit. Admission to correspondence courses is open only to employees of the Department of Agriculture.

REGISTRATION AND FEES

Registration for the fall semester should be completed by Saturday, October 9; registration for the spring semester should be completed by Saturday, February 12, 1944. After the close of the registration period, students may enroll for credit only with the approval of the instructor and the Director. Mail registration forms will be supplied on request. Registration should be made at the earliest opportunity in Room 1031, South Building, Department of Agriculture. When the limitation set for each course is reached, registration for that course is closed. Registration is not completed until the requisite fees have been paid.

Late Registration Fee. Students who register after October 9, 1943 for the first semester, or after February 12, 1944 for the second semester, must pay a late registration fee of \$1.00 a course. This does not apply to courses that begin after October 9 or February 12, nor to persons who submit written evidence that official government action prevented their registration prior to that date.

Fees. The fee for each course is indicated in the course description. Unless otherwise stated, fees are computed at the rate of \$6.00 a credit hour for undergraduate courses, and \$7.00 a credit hour for graduate and most advanced undergraduate courses. The fee for auditing a course is the same as that charged for credit. For each correspondence course there is an additional supplies fee of \$5.00 a semester, payable at the time of registration, to cover costs of postage, correspondence, and materials. In instances where local supervision is desired and is provided, an extra fee is charged.

Residence Credit at the American University. Students planning to enroll in cooperative courses, offered at the Graduate School, for residence credit towards an advanced degree at American University must work out their programs in advance with the Dean of the American University, Graduate Division, and must file with the registrar of that institution (at 1901 F Street, NW.) a transcript of previous academic work.

Partial Payment Plan. Arrangements may be made at the time of registration for payment in two installments, for which there will be an

additional service charge of \$1.00 for each course. The first installment of not less than half the full fee, plus the \$1.00 service charge, must be paid at the time of registration. The second and final installment must be paid on or before November 13, for the first semester, and on or before March 17, for the second semester. Failure to pay will result in automatic suspension from the course.

Refunds. Students withdrawing from classes will not be entitled to refunds except that—

1. When a student is granted permission to withdraw from a fall semester course on or before October 9, or from a spring semester course on or before February 12, his fee, minus a \$3.00 registration charge will be refunded.
2. When a student is *OFFICIALLY* transferred out of the Washington area or leaves Washington to enter the armed forces, his fee, minus a \$3.00 registration charge for each course, will be refunded in the amount proportionate to the unexpired portion of the semester, provided written evidence of such transfer or induction is presented. This does not apply to cases arising out of the student's voluntary action.

All adjustments are made as of the date on which application for refund is received.

How to Find Rooms. Classes are held in both the Administration Building (north side of Independence Avenue), and the South Building (south side of Independence Avenue). The two buildings are connected by bridges at either end of the third floor and by a tunnel east-center in the basement. See the outside back cover for buildings plan and instructions on how to find rooms.

Room schedules will be posted after September 22, 1943 for first-semester courses and after January 26, 1944 for second-semester courses on bulletin boards outside Room 1031, and in the north entrances of the fourth and seventh wings of the South Building. Because of conflicts with the use of rooms for official purposes, occasional changes in rooms must be made as the semester progresses. When such unavoidable changes have to be made, patience and understanding will be appreciated.

CREDIT AND CERTIFICATION

Academic Credit. Persons registering for academic credit must satisfy all prerequisites for admission to the course, as specified in the course description.

Students who wish to transfer graduate or undergraduate credit to a college or university or to the United States Civil Service Commission must file with the Graduate School (by November 24 for fall courses; by March 22 for spring courses) an official record indicating satisfactory completion of four years of undergraduate work (for courses carrying graduate credit), or indicating satisfactory completion of at least fifteen units of high school work (for courses carrying undergraduate credit). Such records become the property of the Graduate School. Graduate students

should arrange their programs in advance through the dean of the graduate school of the institution from which the degree is contemplated. The latest catalogs of colleges and universities are available for examination in the Graduate School Office.

The United States Civil Service Commission accepts Graduate School credits, the same as credits from recognized colleges and universities, for examination and qualification purposes. Although courses are of standard graduate and undergraduate grade for the levels indicated (with the exception of a few non-credit courses given to meet special training needs of Federal employees), the School does not grant degrees and has never sought that authority. It prefers to cooperate with existing institutions having that function. Certifications of Graduate School work have been accepted for the past twenty-two years by many of the leading colleges and universities. Because of the unusual conditions under which the School operates, it has never asked, and never felt it necessary to ask, to be included on the lists of accrediting associations. For acceptance of its credits, it relies on the merits of its courses and on the reputation and recognized competence of its instructors. Methods, grades, and credits are considered meaningless unless they result in demonstrated knowledge, skills, and attitudes and in demonstrated ability to make effective application. Course requirements and comprehensive examinations for credit are planned accordingly.

Cooperation with American University. The Graduate School of the Department of Agriculture and the Graduate Division of the School of Social Sciences and Public Affairs of The American University have found it mutually advantageous to cooperate in portions of their graduate programs. Certain courses in each school which supplement courses in the other are offered cooperatively. Courses preceded by an asterisk may be applied as residence credit towards an advanced degree at The American University.

Audit. A student registering as an auditor receives full privileges of class participation if he chooses to exercise them. He does not receive a grade; he receives only a mark of AUD. He is not expected to take examinations and is not held responsible in any other way for meeting standards expected of credit students.

Grades. Students registering for credit will receive written notice by mail of grades received. Please keep the School office informed of changes of address.

CERTIFICATION OF RECORD

Upon the student's written request, an official certification bearing the seal of the Graduate School will be sent to him or to an organization designated by him. The fee for this service is 50 cents a copy prepaid. (Note: Students who desire a certification of work done prior to the academic year 1941-42 must comply with certification rules in effect at the time the student was enrolled). Certification of record for academic credit to be transferred to a college or university will not be made unless the student has filed with the Graduate School transcripts of his academic work. (See Credit and Certification above.)

Calendar for 1943–1944

1943							1944						
JULY							JANUARY						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
4	5	6	7	8	9	10	2	3	4	5	6	7	8
11	12	13	14	15	16	17	9	10	11	12	13	14	15
18	19	20	21	22	23	24	16	17	18	19	20	21	22
25	26	27	28	29	30	31	23	24	25	26	27	28	29
AUGUST							FEBRUARY						
1	2	3	4	5	6	7	1	2	3	4	5	6	7
8	9	10	11	12	13	14	6	7	8	9	10	11	12
15	16	17	18	19	20	21	13	14	15	16	17	18	19
22	23	24	25	26	27	28	20	21	22	23	24	25	26
29	30	31					27	28	29	30	31		
SEPTEMBER							MARCH						
5	6	7	8	9	10	11	5	6	7	8	9	10	11
12	13	14	15	16	17	18	12	13	14	15	16	17	18
19	20	21	22	23	24	25	19	20	21	22	23	24	25
26	27	28	29	30			26	27	28	29	30	31	
OCTOBER							APRIL						
3	4	5	6	7	8	9	2	3	4	5	6	7	8
10	11	12	13	14	15	16	9	10	11	12	13	14	15
17	18	19	20	21	22	23	16	17	18	19	20	21	22
24	25	26	27	28	29	30	23	24	25	26	27	28	29
31							30						
NOVEMBER							MAY						
1	2	3	4	5	6	7	1	2	3	4	5	6	7
8	9	10	11	12	13	14	7	8	9	10	11	12	13
15	16	17	18	19	20	21	14	15	16	17	18	19	20
22	23	24	25	26	27	28	21	22	23	24	25	26	27
29	30						29	30	31				
DECEMBER							JUNE						
5	6	7	8	9	10	11	4	5	6	7	8	9	10
12	13	14	15	16	17	18	11	12	13	14	15	16	17
19	20	21	22	23	24	25	18	19	20	21	22	23	24
26	27	28	29	30	31		25	26	27	28	29	30	
							31						

COURSES OF INSTRUCTION

COURSE SYMBOLS

For easier reference to particular courses these symbols replace those used previously

Courses 1 -99 \div non-academic

Courses 100-499 \div strictly undergraduate

Courses 500-699 \div graduate and advanced undergraduate

Courses 700-UP \div graduate (may be taken by undergraduates only with written permission of the Director)

"C" after course number \div correspondence course

Course numbers followed by (a) are first-half of that course, or by (b) are second-half

Courses enclosed in brackets are not given in 1943-44

The figure in parenthesis following the course title indicates the number of credits a semester

Courses preceded by an asterisk (*) may be applied as residence credit towards an advanced degree at The American University

Department of Biological Sciences

DEPARTMENTAL COMMITTEE

MR. BARSS, Chairman
MR. BISHOPP MR. SCHWARTZ
MR. McCALL MR. SHANTZ

Note: See page 23 for explanation of course symbols.

History of Science

(See Physical Sciences 144)

[206.] Useful Plants of the American Tropics

MR. HEYL

207. Land Management Ecology (3) Fall

Tu-Th 6-7:30 beginning Sept. 28. \$18

MR. FOSBERG

MR. GRAHAM

Application of ecological principles to major types of land use. Emphasis placed upon those fundamentals of both plant and animal ecology which apply to the management of land resources such as soil, crops, forests, range, and wildlife. Especially designed for those without extensive biological training who are interested in forestry, range management, wildlife management, and soil conservation and wish to obtain an ecological approach to the techniques of land management.

[554.] Advanced Plant Ecology

MR. WAITE

555. Plant Physiology (2) Fall (at Beltsville)

Th 5-7 beginning Sept. 30. \$14

MR. GREATHOUSE

For *investigators* and *advanced students* interested in fundamental and practical applications of plant physiology. Discussions and demonstrations include the most reliable methods used to solve particular types of problems. Hours, days may be arranged to suit convenience of class.

Prerequisite: General basic knowledge of botany, chemistry, and physics.

556. Plant Biophysics (2) Spring (at Beltsville)

Th 5-7 beginning Feb. 3. \$14

MR. GREATHOUSE

A course for advanced students and investigators interested in the fundamental and practical applications of physical chemistry and physics to plant problems. Hours, days may be arranged to suit convenience of class.

Prerequisite: General knowledge of physics, chemistry, and botany.

558. Diseases of Wildlife (2) Fall

M 6-8 beginning Sept. 27. \$14

MR. COBURN and SPECIALISTS

Embraces a general survey and description of the more important diseases affecting wildlife, including fur animals and game birds raised on game farms. The relationship of these wildlife diseases to human health and to livestock is given consideration, as well as their significance in economic conservation.

Prerequisite: Training or experience equivalent to a bachelor's degree or major in biology.

784. Genetics (3) Year, credit each semester

M 7-10 beginning Sept. 27; Jan. 31. \$21 a semester

MR. ELLINGER

Seminar course based principally on outstanding contributions that have marked great advances in the theory and application of genetics. The first semester covers: From the Greeks to Darwin, the English Biometry School, Johannsen's Pure Lines, Weismann's Germ-plasm Theory, Mendel's work and its rediscovery, the era of Mendelism, Nilsson-Ehle's Multiple Factor Theory, deVries' Mutation Theory. The effects of inbreeding and the phenomenon of hybrid vigor, applications to plant breeding, animal breeding, pathology and human problems.

[] Not given 1943-44.

The second semester covers such subjects as physical basis of heredity, origin of hereditary differences, genetics and evolution, physiological genetics. Lectures, reading assignments, student reports, discussion. (The instructor worked with Johannsen at Copenhagen and has had extensive experience in leading European and American laboratories in this field).

Prerequisite: An elementary course in genetics or broad knowledge of biology or of medicine. The course may be given at Beltsville Research Center if enough there desire it. Please indicate when registering. First meeting to make final arrangements will be in Room 1025 South Building.

210. Some Fundamentals of Landscape Design (2) Fall

F 6-8 beginning Oct. 1. \$12

MR. MULFORD

Principles of landscape design as applied to home grounds, large and small; school and institution grounds; and public parks. Use of plant material in connection with such plans and preparation of plans.

[211.] Critical Tropical Crops

MR. BRESSMAN and SPECIALISTS

Soil Fertility

(See Physical Sciences 157)

MR. ABLEITER

559. Medical and Veterinary Entomology (2) Year, credit each semester

Tu 6-8 beginning Sept. 28; Feb. 1. \$14 a semester

MR. BISHOPP

A timely general course in medical entomology with emphasis on the practical aspects of this important field. The biology, habits, and relation to disease of insects, spiders, mites, and ticks, are discussed. How these arthropods affect man and animals as intermediate hosts, or carriers of disease-producing organisms, is given attention and special consideration is given methods of control. The adaptation of known control procedures to present-day defense problems is considered. Features of the course include lectures by outstanding specialists in this general field and round-table discussions of practical problems.

Prerequisite: Basic training in biology or consent of instructor.

208. Food, Nutrition, and Health (2) Each semester

Th 6-8 beginning Sept. 30; Feb. 3. \$12

MISS CALLISON

Presents the fundamental information necessary for an intelligent understanding of the foods we eat, the uses we make of them, and the role of diet in the conservation of health. It is highly desirable that the student have had at least one course in either chemistry, physics, or biology.

Topics discussed are (1) the body mechanism, (2) the proximate principles and their functions in the body, (3) digestion of proteins, fats, and carbohydrates, (4) energy metabolism, (5) minerals and their functions, (6) the vitamins and their functions, (7) foods as sources of nutritional elements, the processing of foods and effects on food value, government protection of foods, (8) requirements of adequate human nutrition; planning of diets, including some of the common special diets that are frequently prescribed by the physician and must be prepared in the home.

Economic Geography

(See Social Sciences 613)

MR. WHIPPLE

Economic Geography of Europe

(See Social Sciences 614)

MR. WHIPPLE

Comparative World Agriculture

(See Social Sciences 581)

MR. WHIPPLE

[] Not given 1943-44.

209. Systematic Botany (2) Year, credit each semesterM 6-8 beginning Sept. 27 and Jan. 31. \$12 each semester MR. S. F. BLAKE

Intended to give those with no previous experience in systematic botany an acquaintance with the elementary principles of the subject sufficient to enable them to use the ordinary manuals to advantage. The second semester is devoted to the identification of wild plants of this region by the use of a manual. One or two short field trips will be held.

Statistical Methods in Biology and Agriculture

(See Mathematics and Statistics 513C)

MR. WADLEY**Design and Analysis of Complex Experiments**

(See Mathematics and Statistics [723])

MR. BRANDT**Department of Engineering and Mechanical Arts**

DEPARTMENTAL COMMITTEE

MR. SETTE, Chairman

MR. HAINSWORTH

MR. M. S. WRIGHT

MR. TRULLINGER

MR. WARNER

Note: See page 23 for explanation of course symbols.

ENGINEERING**175. Naval Architecture¹ (2)** Year, credit each semesterTu 6-8 beginning Sept. 28; Feb. 1. \$12 a semester MR. C. L. WRIGHT

First semester: Determination of principal dimensions of a ship; development of ship lines; displacement and stability calculations; launching.

Second semester: Trochoidal wave theory; action of ships in waves; hull form and resistance; power; propulsion; steering.

176. Ship Construction¹ (2) Year, credit each semesterTh 6-8 beginning Sept. 30; Feb. 3. \$12 a semester MR. C. L. WRIGHT

First semester: Shipyard organization; calculations of weight and strength of ships; riveted and welded construction; design of structural parts.

Second semester: Arrangement of machinery and fittings; piping, wiring, and ventilation; load line regulations, tonnage measurement, trial trips, dry docks.

177. Aerodynamics (2) Year, credit each semesterM 6-8 beginning Sept. 27; Jan. 31. \$12 a semester MR. KONECZNY

First semester: Fluid flow, wing theory, airport characteristics, wind-tunnel tests, stability, drag data. Lectures, discussions, and problems.

Prerequisite: Physics and an elementary knowledge of algebra and trigonometry.

Second semester: Engine and propeller considerations, performance calculations, special problems.

Prerequisite: Fundamentals of aerodynamics as covered during first semester, or equivalent.

178. Airplane Stress Analysis (2) Year, credit each semesterTu 6-8 beginning Sept. 28; Feb. 1. \$12 a semester MR. KONECZNY

First semester: Elasticity, strength of materials as applied to aircraft structures, standard methods of analysis. Lectures, discussions, and problems.

Prerequisite: Strength of materials.

Second semester: Applied air and ground loads, load factors, margins of safety, stress ratios, stressed-skin structures, static tests. Lectures, discussions, and problems.

Prerequisite: Fundamentals of airplane stress analysis as covered during first semester, or equivalent.

¹ It is recommended that 175 and 176 be taken together.

179. Aircraft Power Plants (2) Each semester

Th 6-8 beginning Sept. 30; Feb. 3. \$12

MR. BRIGGS and SPECIALISTS

Offered through the cooperation and participation of a group of specialists from the Aircraft Engineering Division of the Civil Aeronautics Administration. The following persons lecture on topics in which they have specialized:

1. Elmer J. Briggs, Chief, Engine Unit
2. E. Forrest Critchlow, Chief, Vibration Control Unit
3. Kenneth S. Cullom, Fuels and Lubricants Specialist
4. William A. Lusby, Engine Specialist
5. John C. Morse, Chief, Propeller Unit
6. David L. Posner, Installation Specialist

This course varies in its treatment of theoretical or practical aspects depending upon the desires of the students as a group, and covers the following:

Engines: Internal combustion engine principles; modern aircraft engines, general design features; carburetion, ignition, lubrication, cooling, fuels and lubricants, engine performance and testing; typical engine failures.

Propellers: Principles of propeller design and construction; modern aircraft propellers of wood, metal, and composite construction; fixed and adjustable pitch, constant speed and feathering types; propeller performance and testing typical propeller failures.

Vibration: General treatment of vibration theory; vibration problems related to aircraft power plant installations; engine and propeller vibration stress surveys; vibration survey of propeller-engine-airplane combination; typical power plant vibration failures.

Power Plant Installation: General treatment of engine and propeller installation; typical installation failures.

Prerequisite: Preferably some background in internal-combustion engines, mathematics, and mechanics.

Water Power Engineering

(See Utility Administration 678)

Electric Utility Engineering

(See Utility Administration 857)

Advanced Physical Metallurgy

(See Physical Sciences 526)

Engineering Alloys

(See Physical Sciences 766)

GRAPHIC PRESENTATION**180. Basic Mechanical Drawing (2) Fall**

Tu-Th 6-8 beginning Sept. 28. \$20

MR. EDICK

Problems in conventional presentation of objects by means of lines, including geometrical problems, orthographic projection, intersections, developments, dimensioning and lettering. Prerequisite to the courses in architectural and mechanical drafting.

181. Architectural Drafting (2) Spring

Tu-Th 6-8 beginning Feb. 1. \$20

MR. EDICK

Study of framing methods and use of building materials, architectural symbols. Drawing of necessary construction details, plan. Section and elevations for a series of buildings, from sketches.

182. Mechanical Drafting (2) Spring

Tu-Th 6-8 beginning Feb. 1. \$20

MR. EDICK

Study of conventional symbols and machine shop practice. A series of problems including detail and assembly drawings. Scale detail drawings from measured sketches by the student. Prerequisite: Basic mechanical drawing or equivalent.

183 Surveying (4) Year, credit each semester

Tu-Th 6-8 beginning Sept. 28; Feb. 1. \$24 a semester

MR. SCHLATTER

Lectures and recitation, 2 hrs. a week; computation and drafting room period, 2 hours a week.

First semester: General introductory study of the principles of plane surveying, including use of the tape, compass, transit, level, plane-table, etc., together with principles of instrument adjustment. The course also covers instruction in field and office procedures, class demonstration of surveying instruments, lettering practice and computations.

Second semester: Advanced classroom study of the methods of surveying applicable to topographic surveys, control for aerial photography, highway location, elementary geodetic surveys including triangulation, and cadastral surveys. The course also includes instruction in plotting from field notes and in the construction of polyconic and Lambert map projections.

The subject matter covered in both semesters is comparable to classroom courses in surveying usually required for civil engineers by accredited colleges or universities. Prerequisite: Trigonometry.

[184.] Aerial Photogrammetry

MR. ASK

Graphic Methods for Presenting Statistical Data*(See Mathematics and Statistics 124)***185. Pencil Sketching and Freehand Drawing (2) Each semester**

M-W 6-8 beginning Sept. 27; Jan. 31. \$15

MR. CADMUS

A study of shade, shadows, and perspective. An intensive study of theory, harmony of lines, and pictorial and outdoor sketching. Each student receives individual criticism. Open to both beginners and advanced students. Sketching only, two hours a week; Wed. (1 hr. cr.) from 6 to 8; fee \$10.

186. Interior Decoration (1) Year, credit each semester

Sec. I. W 6-7 beginning Sept. 29; Feb. 2. \$6 a semester

MISS GARRELS

Sec. II. Tu 8:30-9:30 beginning Sept. 28; Feb. 8. \$6 a semester. Given at Meridian Hill, 16th and Euclid Streets, NW

Sec. III. W 7-8 beginning Feb. 2 (First Semester work). \$6

The first semester includes color, principles of arrangement, walls, floor coverings, window treatments, and lighting. The second semester includes the study of furniture (modern and antique), the most popular English and American period styles, including modern accessories; pictures; and flower arrangement.

MECHANICAL ARTS**[187.] Effective Foremanship**

MR. HOLSTON

188. Glass Blowing (2) Year, credit each semester

Sec. I. M-W 6-7:30 beginning Sept. 27; Jan. 31. \$18 (including materials) a semester

Sec. II. Tu-Th 6-7:30 beginning Sept. 28; Feb. 1. \$18 (including materials) a semester

MR. L. B. CLARK

A laboratory course for technicians. Simple manipulation of joining, bending, and shaping is carried through to the production of useful apparatus. Metal in glass and glass to metal seals of all types are made. During the first semester the soft glasses are used for practice; during the second semester the related glasses are used. Ample opportunity for advanced work is given those who show themselves particularly adapted to the work.

TEXTILES**189. Introduction to Textile Technology (3) Fall**

M-W 8-9:30 beginning Sept. 27. \$18

MR. SOKOLOFF

[] Not given 1943-44.

190. Textile Design and Fabric Development (3) Spring

M-W 8-9:30 beginning Jan. 31. \$18

MR. SOKOLOFF

The technical planning of woven fabrics. Intended to be particularly useful to persons engaged in the development of textiles for military or civilian purposes, writers of specifications for the various Government procurement agencies, and research workers seeking possibilities for practical application of laboratory findings. Subjects covered include: basic weaves and derivatives thereof; leno and pile structures; relation of weave design to physical properties of fabrics; mill specifications and drafts; types of looms and their capacities; cloth analysis; cost calculations; manufacturing operations. Fabrics of many types, from heavy ducks to Jacquard brocades, are discussed. Students analyze samples and draft original designs for new fabrics, giving the technical particulars necessary for manufacture.

Prerequisite: Introduction to Textile Technology, or adequate technical background in textiles

[191.] Cotton Classing

MR. KAUSE

PHOTOGRAPHY**192. Basic Photography (2) Fall**

M 6-8 beginning Oct. 4. \$12

MR. HANSON and SPECIALISTS

A list of the textbooks used in this course may be obtained from the Graduate School Office. The course, elementary and basic in character, is designed to meet the needs of the amateur. Nearly all lectures are fully illustrated with slides, supplemented by other illustrative material. Demonstrations are given when feasible. No laboratory work, but individual guidance will be freely given students who can and will arrange to do practice work. Results of practice work may be submitted for criticism.

Topics covered: elementary photographic optics, films, and plates, the use of cameras and lenses, exposure, composition, darkroom conveniences and technique, developers and development, the technique of negative making, the theory and practice of making contact and projection prints, outdoor and indoor photography, child photography, filters and their use, lighting and posing in portraiture, home portraiture, Kodachrome photography.

192B. Applied Photography (2) Spring

M 6-8 beginning Feb. 7. \$12

MR. PURDY

Same as above, but includes darkroom facilities.

UTILITY ADMINISTRATION AND REGULATION

Note: These courses are offered to meet the special needs of a large group of Federal employees. For their convenience the classes will be held in buildings of the Federal Power Commission, 18th and Pennsylvania Ave., NW.

Information about the technical content of the courses may be obtained from Dr. Fayette S. Warner. Call Branch 60, Federal Power Commission.

677. Public Power (2) Each semester

Tu 7:30-9:30 beginning Sept. 28; Feb. 1. \$14

MR. BLALOCK assisted by
MR. KING and OTHER SPECIALISTS

General review of the development and operations of the publicly owned electric utilities in America. Both historical and statistical analyses of the numerous problems of the publicly owned utilities, involving organization, financing, operations, rates, sales, costs, legal or political obstacles, and "yardsticks." The development and operations of the following publicly owned electric utilities: municipal, district, cooperative, State and Federal.

678. Water Power Engineering (3) Year, credit each semester

M-W 6-7:30 beginning Sept. 27; Jan. 31. \$21 a semester

MR. ROSS

This course is informative in the fundamentals of engineering and their application to the planning and construction of dams, reservoirs, and power plants in the development of river basins

[] Not given 1943-44.

in the United States. Included will be a study of river flow, regulation by reservoirs, water power estimates, hydraulic turbines, and plant arrangement. Important rivers and projects are used as illustrative examples in the practical application of fundamental principles and procedures.

Prerequisites for credit: Mathematics and physics.

857. Electric Utility Engineering (2) Year, credit each semester

Tu 7:30-9:30 beginning Sept. 28; Feb. 1. \$14 a semester **MR. JESSEL** assisted by **MR. LYNOTT, JR.**

The fundamentals of electric utility engineering and their practical application to generating, transmitting, and distributing electric energy by electric utilities. Designed for engineers, engineering aids, lawyers, accountants and others who desire a broader understanding of the basic principles of electric utility engineering as applied to operating electric utilities. Subjects covered are: A general description of production, transmission, and distribution plants of electric utility, including each of the units of the property and an explanation of its functions; lectures and case studies in design and operation of electric generating stations, transmission lines and substations, and distribution substations, feeders, transformers, and services; discussions of practices followed by electric utilities in serving different classes of customers.

679. Electric and Gas Utility Rates (2) Fall

Th 7:30-9:30 beginning Sept. 30. \$14 **MESSRS. ZINDER and CAINE**

Principles and practice of rate design; customer and service classifications; engineering and economic factors in rates and rate contract forms and provisions; discussion of allocation of costs; problems in determination of rate discrimination; review of problems of rate base, operating expenses, depreciation and rate of return.

366. Original Cost Accounting for Electric and Gas Utilities (3) Year, credit each semester

M 7:30-10:30 beginning Sept. 27; Jan. 31. \$18 a semester

MESSRS. K. L. SMITH and RAINWATER

Application of principles and procedures in accounting for utility plant of electric and gas utilities on the basis of original cost, including a brief review of the historical development leading up to the adoption by regulatory authorities of the basis of cost of property "to the person first devoting it to a public service," the methods of determining original cost of utility plant when such property has passed through one or more ownerships, of the accounting treatment for write-ups and other adjustments arising from the establishment of original cost, of the accounting requirements of regulatory bodies relative to plant additions and retirements, of the principal features of "perpetual inventory" or continuing property record installations; and a thorough study of the problem of depreciation in connection with original cost accounting.

680. Public Utility Evidence (3) Year, credit each semester

W 7:30-10:30 beginning Sept. 29; Feb. 2. \$21 a semester

MESSRS. MCALISTER and GATCHELL

Principles and methods used in planning electric and gas formal cases; in supervising the work of witnesses; in qualifying, examining and cross-examining witnesses; in using evidence and in the preparation of briefs; in conducting examinations of utility plants and operations; and in collecting and organizing data for the purpose of preparing and presenting exhibits on engineering, economic, and legal aspects of formal cases.

581. Manufacturing Industries and Their Use of Energy (2) Fall

M 7:30-9:30 beginning Sept. 27. \$14

MESSRS. WARNER and THOMPSON

Designed to give those who are interested in the operations of business a knowledge of the economics of manufacturing and the use of power and energy in production. Industries are analyzed to discover the nature and the causes of their growth, decline, shifts in location, seasonal variations in production, difficulties of production control, investment in plant, shifts in raw materials, changes in processes of production, competition between companies or with other industries, industrial location, and the economic transportation for manufacture and distribution with regard to the conversion of raw materials into basic, semi-finished and finished products in several of the various basic extracting and manufacturing industries. The industries will include coal, petroleum, lumber, and forest products, iron and steel, aluminum, copper, leather, rubber, clay products, textiles, meat packing, and various food products.

Department of Languages and Literature

DEPARTMENTAL COMMITTEE

MR. HUMPHREY, Chairman

Note: See page 23 for explanation of course symbols.

IMPORTANCE OF ENGLISH WRITING AND SPEECH

In selecting for the Department of Languages and Literature the courses in English here described, much thought and care have been given those branches of our language that are basic and necessary to its intelligent use and finesse in expression. The major objective is the development of facility of expression, both oral and written, so that thoughts and feelings can be presented clearly, interestingly, and convincingly. Among students preparing for technical careers and among busy people employed on the basis of their technical competence, there is an inevitable tendency to concentrate on subject-matter specialties, to the great neglect—if not exclusion—of the auxiliary subjects that can effectively implement such specialties. It is common knowledge in the government service that nothing so much retards the progress of many young technicians, scientists, and other professional personnel as their inability to incorporate the results of their thinking and of their research in effective, concise, lucid English, written or oral. Technical knowledge is of no value unless it can be communicated to others. There are indeed few persons who cannot greatly benefit from the further sharpening of their tools of communication.

ENGLISH

222. Composition and Rhetoric (2) Year, credit each semester

Th 6-8 beginning Sept. 30; Feb. 3. \$12 a semester

MISS HARMAN

Equivalent of first-quarter freshman English. An introductory course in writing and English usage, designed especially for those who need a course preparatory to more advanced English courses. Special attention given to the fundamental principles and mechanics of good writing—grammar, punctuation, spelling, etc.

223. Descriptive English Grammar (2) Each semester

M 6-8 beginning Sept. 27: Jan. 31. \$12

MISS HARMAN

A course in grammatical principles, stressing sentence structure and correct English form. Students are required to analyze sentences by diagram and to correct examples of bad English.

WRITING AND EDITING

224. Creative Writing (2) Each semester

Th 6-8 beginning Sept. 30; Feb. 3. \$12

MR. WING

Primarily this course aims to develop the student's inclination to practice writing through guidance and example. Emphasis is laid on facility of expression. The course presupposes fundamental knowledge of composition. Stories, sketches, articles, book and magazine reviews, personal letters, and letters to editors are assigned work.

225. Editing (3) FallM-W 6-7:30 beginning Sept. 27. \$18
Limited to 40 students.

MR. MERRILL and SPECIALISTS

Intended primarily for those seeking information on editorial techniques involved in handling manuscripts after they leave the author's hands and until they are issued in printed form. Discussion of the fundamental principles of editing, including the organization or rearrangement of material for effective presentation; rhetorical style in relation to subject matter; sentence structure and effective use of English; paragraphing and leads; consideration governing titles, tables of contents, headings, footnotes, illustrations, literature citations and bibliographies, and statistical checking; the principles of table formation and arrangement; typography and the relation of type to subject matter; and the fundamentals of indexing and proofreading. Practical examples of editorial work are discussed in class. Opportunity for some familiarity with the style manual of the Government Printing Office is provided. Collateral reading is indicated. Those desiring credit for the course are required to pass a written examination at the end of the semester.

226. Writing for Official Purposes (2) Each semester

F 6-8 beginning Oct. 1; Feb. 4. \$12

MR. CHEW

How to present facts and ideas in official writing is the problem of this course. Every type of writing has its own requirements. Official writing, though like other writing in most respects, has important peculiarities. For example, it must respect the boundaries of science, of governmental organization, and of official policy. Frequently the attempt to do so makes it wordy, wooden, and lifeless. The course, which presupposes some writing experience, considers ways of making government writings clear, vigorous, and readable in spite of the necessary rules and restrictions. It shows where the limitations do not apply, as well as where they do, so that all possible freedom may be developed. One major writing project is required to earn credit for the course.

565. Writing of Documented Papers (2) Each semester

Th 6-8 beginning Sept. 30; Feb. 3. \$14

MR. HUMPHREY

Designed primarily to teach the essential principles involved in writing research papers: How to choose a subject; how to discover its orientation; how to determine worth and pertinence of material bearing upon chosen subject; note taking and annotation; selection and organization of subject matter; its adequate documentation; preparation of the working plan or outline; the writing of the documented paper; arrangement of citations to literature.

227. Workshop in Government Radio Programs (3) Year, credit each semester

M 6-9 beginning Sept. 27; Jan. 31. \$18 a semester

MR. MILLSON

Involves the study and preparation of various types of government radio programs, with particular emphasis on methods of preparation of radio talks, dialogs, outlines for ad lib broadcasts, round table discussion, and dramatization. Course content is derived primarily from current radio programs of various Federal agencies, with concentrated study of the requirements of radio presentation of Government information and preparation of scripts for use in the field. Programs prepared by students are presented as laboratory or radio workshop assignments, to provide an opportunity to acquire knowledge of microphone technique, radio speaking, and general radio production, essential to effective writing in the radio medium and to an understanding of the problems of the field radio personnel. Occasional lectures by radio station representatives with field trips to observe local radio studio broadcasts and transcriptions, to provide necessary knowledge of radio station operations in relation to Government radio broadcasts. Admission by consent of instructor.

SPEECH**228. Fundamentals of Speech (2) Fall**

Tu 6-8 beginning Sept. 28. \$12

MRS. PROVENSEN

A course to develop in the speaker the ability to communicate his ideas readily and effectively through the study of audience analysis, distinct utterance, outlining, word usage, enrichment of vocabulary, and voice production. Ample opportunity to speak. Individual criticism.

229. Effective Speaking (2) Spring

Tu 6-8 beginning Feb. 1. \$12

MRS. PROVENSEN

Clear, forceful, and convincing expression is the result of directed practice in a variety of speech situations. This course concentrates on preparation and practice in public speaking and

the speech arts. Speeches for special occasions, description, exposition, radio speaking, story telling, and training in the art of conversation. Emphasis is on practice; knowledge of speech fundamentals is presupposed.

232. Voice and Remedial Speech (2) Each semester

Tu 6-8 beginning Sept. 28; Feb. 1. \$15

MR. HUTCHESON

Study and intensive drills in voice production, flexibility, range, articulation and enunciation. Training and practice are designed to improve vocal conditions for all speech purposes and to remedy minor speech difficulties. In order that students may receive more individual attention, registration is limited to twenty.

43. Personal Development (0) Each semester

W 6-8 beginning Sept. 29; Feb. 2. \$12

MRS. PROVENSEN

Discovery and development of the potentialities of each student. Poise, confidence, appearance, make-up, dress and color sense, art of conversation, cultivation of wider range of interest, and curiosity. Actual social situations created and discussed. Conferences, guest speakers.

230. Advanced Public Speaking (2) Fall

Th 6-8 beginning Sept. 30. \$12

MRS. PROVENSEN

A speech course centering around discussion of postwar problems with ample opportunity for speaking experience. Through guest lecturers, directed outside reading and participation in discussion, students acquire the knowledge, poise and confidence essential to effective speaking.

566. Advanced Diction for Executives (2) Fall

F 6-8 beginning Oct. 1. \$14

MR. OLIVER

A practical study of word choice and discrimination, based upon the new research in vocabulary and its relation to effective thinking, speaking, and writing. Keyed to executives who wish to increase their verbal ability, enrollment is limited to those whose Civil Service rating is CAF-7 or P-2 or higher.

567. Principles of Persuasion (2) Spring

F 6-8 beginning Feb. 4. \$14

MR. OLIVER

Human motivation as exemplified in basic principles of persuasive thinking is analyzed and practiced in speeches and letters; the influence of emotion rationalization, stereotypes, prejudice, and the will-to-believe are stressed.

IMPORTANCE OF FOREIGN LANGUAGES

In the past courses offered in foreign languages have been limited to those languages shown by experience to be in most urgent demand, or to promise some special value to those engaged in research or in fields of international service.

The increase in the number and scope of foreign language courses offered in this catalog is quite in keeping with experience of the times, which has shown the importance of many of the languages in which there was relatively little interest in the past. Research workers, administrators, and staffs of military, naval, and other war agencies have felt seriously hampered in their work by lack of preparation in some of the languages now offered. They have requested that the offerings be broadened so that those who work in such fields as propaganda analysis, military government, and economic warfare, as well as in scientific and technical pursuits, may improve their abilities to handle the complicated world inter-relationships imposed upon them by global warfare.

If a sufficient number of students is interested in courses not offered in the spring semester but needed in the interest of the war effort, the Graduate School will try to arrange such classes. It is the aim of those responsible for these courses to

conduct them so as to develop in their students a ready and intelligent use of the language. The person who is seeking the maximum practical value from a foreign language must learn not only to translate it but to think in it well enough for translation to be unnecessary. If possible, he should acquire a spoken command of at least one language other than his own.

Note: Foreign language courses are given at four levels:

Elementary—two semesters	Conversation—one or two semesters
Intermediate—two semesters	Technical—one or two semesters

Elementary year—foundation work in grammar, vocabulary, reading, and translation, with some conversation.

Intermediate year—grammar review, more difficult reading and translation, use of idioms, writing and discussion in the language.

Conversation—development of facility in discussion and reading, use of idioms, writing and thinking in the language without translating.

Technical—development of technical vocabularies in special scientific or commercial fields. In general it is best to take the courses in the order indicated unless the student has had training equivalent to the preceding courses.

Note: Course numbers followed by (a) are first-half of that course, or by (b) are second-half.

ARABIC

233^a. Elementary Arabic (2) Year, credit each semester

F 6-8 beginning Feb. 4. \$12 a semester

MR. TANNOUS

233^b. Elementary Arabic (2) Year, credit each semester

Th 6-8 beginning Feb. 3. \$12 a semester

MR. TANNOUS

235. Conversational Arabic (2) Spring

F 8-10 beginning Feb. 4. \$12

MR. TANNOUS

CHINESE

238^a. Elementary Chinese (4) Year, credit each semester

M-F 6-8 beginning Jan. 31. \$24 a semester

MR. TSIANG

238^b. Elementary Chinese (4) Year, credit each semester

Tu-Th 6-8 beginning Feb. 1. \$24 a semester

MR. TSIANG

DUTCH

243. Elementary Dutch (2) Year, credit each semester

Th 6-8 beginning Sept. 30; Feb. 3. \$12 a semester

MR. KUYPER

[244.] Intermediate Dutch

MR. KUYPER

CZECH

248. Elementary Czech (3) Year, credit each semester

Tu-Th 6-7:30 beginning Sept. 28; Feb. 1. \$18 a semester

MRS. MARSALKA

249. Intermediate Czech (3) Year, credit each semester

W 6-7:30 Th 7:30-9 beginning Sept. 29; Feb. 2. \$18 a semester

MRS. MARSALKA

FRENCH

253^a. Elementary French (3) Year, credit each semester

M-W 8-9:30 beginning Jan. 31. \$18 a semester

MR. HUMPHREY

253^b. Elementary French (3) Year, credit each semester
 M-W 6-7:30 beginning Jan. 31. \$18 a semester MR. HUMPHREY

254. Intermediate French (3) Year, credit each semester
 F 6-9 beginning Oct. 1; Feb. 4. \$18 a semester MR. HUMPHREY

255. Conversational French (3) Year, credit each semester
 Tu 6-9 beginning Sept. 28; Feb. 1. \$18 a semester MR. GRIGAUT

[256.] Technical French MR. HUMPHREY

GERMAN

259^a. Elementary German (3) Year, credit each semester
 F 6-9 beginning Feb. 4. \$18 a semester MR. LEDERER

259^b. Elementary German (3) Year, credit each semester
 M 6-9 beginning Jan. 31. \$18 a semester MESSRS. LEDERER and LEINEWEBER

[260.] Intermediate German

[260.] Intermediate German

HINDI

265. Elementary Hindi (3) Year, credit each semester
 M 6-9 beginning Sept. 27; Jan. 31. \$18 a semester MR. GOGATE

268. Elementary Hindustani (2) Year, credit each semester
 F 6-8 beginning Feb. 4. \$12 a semester. MR. SAMRAS

[266.] Intermediate Hindi MR. GOGATE

ITALIAN

[] Not given 1943-44.

JAPANESE

275^a. **Elementary Japanese** (3) Year, credit each semester
 Tu-Th 7:45-9:15 beginning Feb. 1. \$18 a semester MR. YOSHIOKA

275^b. **Elementary Japanese** (3) Year, credit each semester
 Tu-Th 6-7:30 beginning Sept. 28; Feb. 1. \$18 a semester MR. YOSHIOKA

[276.] Intermediate Japanese MR. YOSHIOKA

278. **Technical Japanese** (3) Year, credit each semester
 F 6-9 beginning Oct. 1; Feb. 4. \$18 a semester MR. YOSHIOKA

MALAY

280. **Elementary Malay** (3) Year, credit each semester
 M-F 8-9:30 beginning Jan. 31. \$18 a semester MR. TSIANG

POLISH

284. **Elementary Polish** (3) Year, credit each semester
 M 6-9 beginning Sept. 27; Jan. 31. \$18 a semester MR. BRAUNSTEIN

[285.] Intermediate Polish MR. BRAUNSTEIN

PORTUGUESE

290. **Elementary Portuguese** (3) Year, credit each semester
 Tu-Th 6-7:30 beginning Sept. 28; Feb. 1. \$18 a semester MR. D'ECA

291. **Intermediate Portuguese** (3) Spring
 M-W 6-7:30 beginning Jan. 31. \$18 MR. D'ECA

RUSSIAN

295^a. **Elementary Russian** (3) Spring
 Th 6-9 beginning Feb. 3. \$18 MR. PREVEDEN

295^b. **Elementary Russian** (3) Year, credit each semester
 Sec. I. M 6-9 beginning Sept. 27; Jan. 31. \$18 a semester MR. PREVEDEN
 Sec. II. Tu 6-9 beginning Sept. 28; Feb. 1. \$18 a semester
 Sec. III. F 6-9 beginning Oct. 1; Feb. 4. \$18 a semester

296. **Intermediate Russian** (3) Year, credit each semester
 W 6-9 beginning Sept. 29; Feb. 2. \$18 a semester MR. SAHAROV

297. **Conversational Russian** (2) Fall
 Th 6-8 beginning Sept. 30. \$12 MR. BENSIN
 Prerequisite: Two years of Russian

298. **Technical Russian** (2) Spring
 F 6-8 beginning Feb. 4. \$12 MR. BENSIN

SPANISH

(Note: The Spanish courses are year courses with a first and second half available each semester in most cases. Students registered in the Fall Semester of 300a should continue with the same instructor in the Spring Semester.)

300^a. Elementary Spanish (2) Each Semester \$12

M beginning Jan. 31. Sec. I 6-8 (Sainz) Sec. II 8-10 (Sainz)

Tu beginning Feb. 1. Sec. III 6-8 (Guest) Sec. IV 8-10 (DeRosa)

W beginning Feb. 2. Sec. V 6-8 (Olds) Sec. VI 8-10 (Sainz)

300^b. Elementary Spanish (2) Each Semester \$12

M 6-8 beginning Jan. 31. Sec. I (Guest) Sec. II (O. Russell) Sec. III (Olds)

Tu 8-10 beginning Feb. 1. Sec. IV (Batista) Sec. V (Parmentier)

W 6-8 beginning Feb. 2. Sec. VI (M. Johnston) Sec. VII (Parmentier) Sec. VIII 8-10 (M. Johnston)

301^a. Intermediate Spanish (2) Each semester

F 6-8 Beginning Oct. 1; W 6-8 beginning Feb. 2 \$12 MISS NICHOLS

301^b. Intermediate Spanish (2) Spring

F 6-8 beginning Feb. 4. \$12 MISS NICHOLS

302. Spanish Conversation and Literature (2) Year, credit each semester

Sec. I M 6-8 beginning Sept. 27; Jan. 31. \$12 a semester MR. GIRO

Sec. II Th 6-8 beginning Sept. 30; Feb. 3. \$12 a semester

[303.] Technical Spanish

304. Commercial Spanish (3) Year, credit each semester

F 6-9 beginning Oct. 1; Feb. 4. \$18 MR. LEVER

Advanced composition in commercial correspondence; commercial geography, monetary systems, certificates and invoices, etc.; cable systems, insurance and banking abbreviations. Designed to give the intermediate student of Spanish familiarity with current commercial correspondence usage and ability to compose acceptable commercial correspondence.

Prerequisite: One year of elementary Spanish or equivalent.

La America Latina Y Los Estados Unidos

(See Social Sciences 611)

LITERATURE

44. The Classics (0) Each semester

Tu 8-10 beginning Sept. 28; Feb. 1. \$15 MRS. SCOFIELD

This seminar in some of the classics of poetry, history, philosophy, and criticism is offered in cooperation with St. John's College of Annapolis. The method of the course will be seminar dialectic, for which the book read will be the common matter for group discussion. Book lists will be available at the Graduate School during the weeks preceding the opening date.

795. Extension Thesis (6 when approved)

Registration fee \$3 MR. M. C. WILSON

An opportunity will be afforded to qualified persons who desire to undertake a study of an agricultural extension problem and to submit a thesis. The amount of credit, to be determined by a thesis committee, will be based upon the nature of the problem, amount of work, and quality of the thesis.

Note: *Other courses usually offered in Extension Education are deferred until further notice.*

Department of Mathematics and Statistics

DEPARTMENTAL COMMITTEE

MR. DEMING, Chairman	MR. STAUBER
MR. BRANDT	MR. STINE
MR. GIRSHICK	

OPPORTUNITIES FOR STUDY

To a greater extent than ever before, our country is dependent on the analysis of quantitative data. Action in the solution of problems in industrial and agricultural production requires prediction, which in turn requires skill in the collection, evaluation, and analysis of data, plus knowledge of the subject matter gained through studies of economics, sociology, engineering, or other branches of the natural and social sciences. In industry and in Government service, the demand for valid methods of prediction as a basis for action is placing more and more stringent requirements on statistical methods, as more and more is expected of public programs designed to stabilize or improve economic and social conditions. Making predictions and recommendations for action is the special business of the statistician.

The situation in Washington creates an unusual opportunity for students who wish to pursue studies in statistics. For years, Washington has more and more been becoming the center of many activities, political, economic, and scientific. To serve the public in these fields the Government has brought in men of education and experience who by the nature of their daily duties must make predictions, recommend action, and face the consequences. They are daily faced with realities and responsibilities; they are daily solving problems that must be solved. The instructors in the Graduate School are drawn from such men.

Employment opportunities are greater now than ever before for people trained in the statistical aspects of various fields of subject matter. The demand ranges from the statistical clerk who may need training in only one or two basic courses, on up to the highest-grade professional statistician who must be thoroughly trained not only in some field of subject matter, but also in higher mathematics and advanced statistical courses. Courses offered in the Graduate School program are designed to afford training at all levels, from the most elementary to the most advanced, with applied courses in several fields of subject matter.

EMERGENCY TRAINING COURSES

The depletion of trained staffs, coupled with the unprecedented demand for tabulation and analysis of quantitative data by the War and Navy Departments, the War Production Board, Office of Price Administration, and other Government agencies, together have brought about an urgent demand for satisfactory replacement personnel. There is particular need for the attainment of familiarity with data already in existence, the more efficient use of existing tabulating machine capacity, and the ability to design and supervise hand tabulations. This demand must be met. The solution lies in the

intensive training of new workers to fill the gaps—in particular, in special training for workers who expect to remain on the job. To this end, the Graduate School is offering several non-mathematical courses, designed particularly to alleviate and avoid shortages both in machine equipment and in trained personnel.

CERTIFIED STATEMENTS OF ACCOMPLISHMENT

A Certified Statement of Accomplishment is offered in each of four fields of statistical study—fields representing areas of statistical preparation and application most useful in the public service. The required program in each field is outlined below. The student who *completes the basic courses and earns 24 credits in specialized courses listed in any column*, with substitutions only as specifically approved, is eligible to receive a Certified Statement of Accomplishment bearing the official seal of the School and signed by the Director and the Chairman of the Department of Mathematics and Statistics. The Statement is not a diploma nor simply a transcript of credit, but it combines certain useful features of both. It is a certification that the student has completed a program of study which, in conjunction with his assumed training in a subject-matter field of application, prepares him for effective public service in a particular statistical field. Courses completed and the quality of accomplishment will be recorded on the back of the Statement, which may be used as a personal record of achievement or a public record of qualification.

SUGGESTIONS FOR PROGRAMS OF STUDY

The study of statistics is the study of collecting and evaluating evidence, making predictions, and recommending action. Statistics does not exist as a science by itself; it is a tool, helpful to science. The principles of statistical inference are the same in all sciences, natural and social, but different problems and requirements do demand adjustment of statistical procedures to the individual situation. The courses offered on the following pages provide training in general principles, and illustrations of specific application.

The fundamental requirement of a good statistician is that he know the subject matter of the field that he is working in. The channels of statistical study offered here will not by themselves produce a statistician. As statistical inference is only a tool for prediction in the natural and social sciences, the student of statistics who desires to obtain a certificate is expected to attain competence in some special field, such as economics, sociology, biology, agriculture, or engineering. A certificate in statistics means that the student has completed the statistical part of his training; and the Departmental Committee must be satisfied, before granting a Certified Statement, that the student is qualified in the subject matter of a particular field.

Persons who do not intend to become professional statisticians but simply desire to learn the elements of statistics as a tool subject, or persons who desire to train for clerical-statistical positions, should, of course, ignore the requirements for a Certified Statement and concentrate on basic courses suited to their special needs.

Survey of Statistics is especially designed to meet the needs of statistical clerks and persons desiring to become statistical clerks.

COURSES LEADING TO CERTIFIED STATEMENTS OF ACCOMPLISHMENT IN STATISTICS

With Concentration in One of the Following Fields of Application

PROCESSING OF DATA

SOCIAL SCIENCES

BIOLOGICAL AND PHYSICAL SCIENCES

DESIGN AND INTERPRETATION OF SAMPLING SURVEYS

BASIC COURSES—Required of all candidates

102. College Algebra	102. College Algebra	102. College Algebra	102. College Algebra
124. Graphic Methods for Presenting Statistical Data	103. Trigonometry and Analytic Geometry	103. Trigonometry and Analytic Geometry	103. Trigonometry and Analytic Geometry
127. Introduction to Statistical Analysis	127. Introduction to Statistical Analysis	126. Introduction to Experimental Design or	126. Introduction to Statistical Analysis
			127. Introduction to Statistical Analysis

SPECIALIZED COURSES—24 credits, selected from appropriate field of application, required of all candidates

128. Machine Tabulation or	106. Calculus	106. Calculus	723. Design and Analysis of Complex Experiments
129. Punch Card Tabulation Procedures	726. Interpretation of Statistical Calculations	723. Design and Analysis of Complex Experiments	741. Theory and Application of Characteristic Function
130. Advanced Study of Tabulating Equipment	727. Planning of Statistical Surveys	724. Methods of Applied Statistics	746. Statistical Inference
727. Planning of Statistical Surveys	722. Processing of Sample and Complete Surveys	726. Interpretation of Statistical Calculations	735. Theory of Sample Surveys
512. Selected Statistical Problems	732. Sampling in Social and Economic Surveys or	703. Interpolation and Fin. Diff.	708. Linear Algebra
726. Interpretation of Statistical Calculations	733. Theory of Sampling	737. Statistics of Crop Estimating	739. Multivariate Analysis
729. Population Statistics	729. Population Statistics	746. Statistical Inference	740. Analysis of Variance
721. Operation of Statistical Studies or	730. Psychometric Methods and Theory	734. Statistical Methods for Research Workers	742. Modern Statistical Theories
722. Processing of Sample and Complete Surveys		731. Least Squares and Curve Fitting	724. Methods of Applied Statistics
728. Statistical Clinic		725. Introduction to Mathematical Statistics	725. Introduction to Mathematical Statistics

ELECTIVE COURSES

500. Advanced Calculus	702. Nomograms
501. Intermediate Algebra (may be substituted for Linear Algebra as prerequisite for Multivariate Analysis)	709. Theory of Infinite Processes
701. Coordinate Geometry and Vectors	710. Differential Equations
704. Interpolation, Approximation, and Quadrature Function	741. Theory and Application of the Characteristic Function

The requirements set for statisticians by the United States Civil Service Commission vary with the level of position and the field of work involved. It should be noted that academic training in statistics is not of itself qualifying; where academic background in statistics is necessary there are other additional requirements such as general education, professional specialization, and experience.

It is suggested that those interested in taking courses related directly to their present assignment, and those uncertain as to which courses parallel the level of their training and backgrounds, consult with their supervisors. Attention is called again, in this connection, to the several counseling resources described on page 16.

OUTSIDE LECTURES

The Graduate School has made a practice of bringing one or two outside leaders in statistical thinking to Washington annually. In the past, the following eminent authorities have lectured here: R. A. Fisher, John Wishart, Walter A. Shewhart, J. Neyman, Frank Yates, Harold Hotelling, and Harold Jeffreys. Some of these lectures are available in print; see the list of publications at the back.

Note: See page 23 for explanation of course symbols.

MATHEMATICS

1. Review of Mathematics (0) Each semester

Tu 6-9 beginning Sept. 28; Feb. 1. \$18

MR. SCHELL

Review course on first-year college level. Algebra, trigonometry and analytic geometry, with emphasis on graphical methods of analysis, and with a brief introduction to calculus methods. Statistical applications are used for illustration.

Prerequisite: Some college mathematics.

102. Algebra (2) Fall

M 6-8 beginning Sept. 27. \$12

MR. GRAVES

Fundamental rules of algebra; exponents; logarithms; proportion; manipulations with proportions; identities and conditions; solution of equations; binomial theorem; numerical approximations. Uses of symbols of operations. Determinants; solution of equations by the reciprocal matrix. Theory of equations; progression series. Permutations and combinations. Graphical methods are illustrated throughout the course. Emphasis is placed on applications to statistics and the physical sciences.

Prerequisites: High-school algebra, and plane and solid geometry.

103. Trigonometry and Analytic Geometry (2) Spring

M 6-8 beginning Jan. 31. \$12

MR. GRAVES

Definitions in trigonometry; identities; complex numbers; DeMoivre's theorem; trigonometric equations. The study of analytic geometry will include the line, conic sections, and some other plane curves, polar coordinates; families of curves with one or more parameters. Parametric equations of curves. Radial axis. Graphic solution of equations. Some three-dimensional geometry.

Prerequisite: College algebra.

[106.] Calculus

MR. FINAN

[] Not given 1943-44.

***500. Advanced Calculus (2)** Year, credit each semester
W 8-10 beginning Sept. 29; Feb. 2 (given every third year). \$14 a semester

MR. WINSTON

Review of fundamental theory of the calculus, Taylor's series and related subjects. Plane curves, envelopes, order of contact. Differentiation and integration of integrals; line, surface and volume integrals. Infinite and improper integrals. Some calculus of variations. Asymptotic series and approximations to definite integrals in functions with several variables. Function scales and relations between derivatives. Reduction of curves to linear relations. Surfaces, tangent planes, and normals. Some study in the complex variable.

Prerequisite: Calculus.

501. Intermediate Algebra (2) Year, credit each semester
F 6-8 beginning Oct. 1; Feb. 4 (given alternate years). \$14 a semester

MR. FINAN

Miscellaneous equations; proportion and manipulation; mathematical induction, multinomial theorem; inequalities; undetermined coefficients; determinants, theory of equations, matrix algebra; root-squaring processes. History. This course is advised as preparation for Linear Algebra 501. Text: Hall and Knight, *Higher Algebra* (Macmillan).

Prerequisite: Two semesters of college mathematics.

***700. Vector Analysis (2)** Fall

Tu 7:30-9:30 beginning Sept. 28. \$14

MR. LITTAUER

Development of the fundamentals of the algebra and calculus of vectors, for the treatment of statistical and engineering problems. Scalar and vector fields. Stokes', Gauss', and Greene's theorems. The hydrodynamical equations of continuity, Maxwell's hypotheses for free space. Applications of vector methods to topics of particular interest to members of the class is made as time permits. Text: Wills, *Vector Analysis*.

Prerequisites: Calculus, plus either a year of college physics or a year of statistics.

701. Coordinate Geometry and Vectors (2) Spring

Tu 7:30-9:30 beginning Feb. 1. \$14

MR. LITTAUER

Lines, planes, conics, quadric surfaces. Tangents, normals, transformations, invariants. Determinants will be used freely. Problems in multiple correlation and curve fitting, and the near indeterminacy of linear equations, will be examined geometrically. The vector notation will be studied, and many of the equations involving tangents and normals will be compressed by vector notation.

Prerequisites: Mathematics 102, 103, 106.

[702.] Nomograms

LT. RASOR

[703.] Interpolation and Finite Differences (Every four years)

MR. DEMING

***704. Interpolation, Approximation, and Mechanical Quadrature (1)** Spring \$10

F 7-9 beginning March 3 (7 weeks).

MR. SHOHAT

[705.] Thermodynamics (1945-46; offered every three years)

MR. BRICKWEDDE

[706.] Analytical Mechanics

MR. COOK

[707.] Statistical Mechanics and Kinetic Theory of Gases
(Every three years)

MR. BRICKWEDDE

[1 Not given 1943-44.]

[708.] Linear Algebra

(Alternate years)

MR. GIRSHICK

[709.] Theory of Infinite Processes

MR. WINSTON

[710.] Differential Equations**STATISTICS****728. Statistical Clinic (2) Fall**

Tu 8-10 beginning Sept. 28. \$14

MR. A. BLAKE and STAFF

A round-table discussion of problems brought to class by the students, followed by the instructor's suggested solution and procedure. Individual registrants will be accepted subject to the approval of the Chairman of the Department of Mathematics and Statistics. Registration limited to 30.

123. Survey of Statistics (3) Each semester

Th 7-10 beginning Sept. 30; Feb. 3. \$18

MESSRS. STEINBERG and HOEBER

A non-mathematical course designed particularly to train statistical clerks in the statistical treatment of data in the fields of economics, sociology, and business. Algebra is reviewed as required. Operations with symbols. Summarizing data by tabulation and by statistical predictions. The Shewhart control charts. Randomness. Computations and interpretation of statistical functions such as means, median, mode, moments, correlation. Business indexes. Trend analysis and curve fitting. Graphic analysis. Lectures and supervised instruction in calculations and table making. Short cuts by the use of charts, multiplication tables, logarithms, slide rule and other devices.

124. Graphic Methods for Presenting Statistical Data (2)

Each semester

M 6-9 beginning Sept. 27; Jan. 31. \$12

MR. HAINSWORTH

Application of various classes, forms, and types of illustrations. Actual working examples in time series charts, frequency diagrams, graphic correlation charts, statistical maps, pictorial symbol charts, and other illustrative examples. Reduction, reproduction and color application to graphic mapping and charting. Lettering, short-cut methods, and standardization rules.

Prerequisite: An introductory course in statistics, or experience to satisfy the instructor.

126. Introduction to Experimental Design (2 or 3) Fall

M 4:45-6:45 beginning Nov. 15 (at Plant Industry Field Station at Beltsville).

\$12 for 2 cr. \$18 for 3 cr.

MR. POPE

For students of the plant and animal sciences who wish an introduction to experimental designs and analyses. It is non-mathematical and is designed particularly as a forerunner to Design and Analysis of Complex Experiments [723]. Topics are randomized blocks, Latin squares, factorial designs, and pseudo-factorial designs. Applications to agricultural science, engineering and industrial tests. An additional seminar is held once a week, time to be arranged, for consideration of special research problems; this seminar is optional, giving one additional credit to those who complete the assignments. There are no mathematical prerequisites, but the student must possess knowledge of some particular field in the natural or social sciences.

125. Statistics for Beginners (2) Year, credit each semester

Th 6-8 beginning Oct. 7; Feb. 10. \$12 a semester

MR. JAFFE

This course requires only a minimum of mathematics. Designed for statistical workers who do not expect to take advanced courses but wish to become familiar with the more common statistical terms and formulas and wish to learn how to lay out the forms for machine calculations. Methods of checking calculations are emphasized. The course includes the presentation of data and the results of calculations by tables and charts. The second semester deals with the relation between two variables; association, correlation, and regression; some elementary aspects of sampling. Prerequisite: High-school algebra (the first semester or its equivalent).

[] Not given 1943-44.

127^a. Introduction to Statistical Analysis (2) Each semester

Th 6-8 beginning Sept. 30; Feb. 3. \$12

MR. PURVES

The collection of economic and census data; the presentation of data in tables and graphs; different kinds of averages; measures and significances of dispersion; elementary principles of sampling; introduction to index numbers and time series; preparation of formulas for machine calculations. Use of slide rule and charts for performing calculations. Prerequisite: Algebra.

127^b. Introduction to Statistical Analysis (2) Each semester

W 8-10 beginning Sept. 29; Feb. 2. \$12

MESSRS. TEPPING and STAUDT

A continuation of Introduction to Statistical Analysis 127^a. Problems in the relations between two or more variables. Association, correlation, and regression, leading into multiple and partial correlation. Introduction to statistical inference. Adaptation of formulas to machine correlation.

128. Machine Tabulation (1) Each semester

W 7-9 beginning Sept. 29; Feb. 2. \$9

MR. KAUFMAN

Registration limited to 30. Given at the office of the I.B.M., 1111 Conn. Ave.

The punch card method. Functions of the principal machines. Instruction covers actual wiring of all types of I.B.M. tabulating equipment. Use of cards to obtain sums of squares and cross products in correlation and curve fitting is demonstrated.

129. Punch Card Tabulation Procedures (1) Each semester

Th 6:30-8:30 beginning Sept. 30; Feb. 3. \$9

MR. MCPHERSON

The uses and functions of various types of tabulating equipment—card punch machines, sorters, counting sorters, gang punches, collators, reproducers, printing tabulators, Census unit tabulators. Training and supervision of personnel. Design of tabulation procedures, with special emphasis on checks and controls for accuracy and economy. Adjustment of machine sheets for rejected cards. Testing machines for accuracy. Computation of the costs of various operations. Several different kinds of equipment are studied, and the student has actual practice on the machines. Some of the meetings of the class are held in the Census Building at Suitland.

130. Advanced Study of Tabulating Equipment (1)

Each semester

F 7-9 beginning Oct. 1; Feb. 4. \$9

MR. KAUFMAN

Given at 1111 Connecticut Avenue.

The solution of difficult problems in the application of tabulating equipment. The instruction includes the actual operation and wiring of the principal machines involved.

Prerequisite: A course in machine tabulation.

511. Graphic Correlation (2) Year, credit each semester

W 8-10 beginning Sept. 29; Feb. 2. \$14 a semester

MESSRS. BEAN and

SMITHIES

Theoretical examples of graphic correlation, followed by practical applications in economics and other fields. Distinctions between the formal mathematical method, the formal graphical method (Ezekiel) and the short-cut method (Bean). Problems concerning the number of variables of inter-correlation, and other aspects of the adequacy and reliability of results.

Prerequisites: High-school algebra; and a first course in statistics or practical experience.

[512.] Selected Statistical Problems**513C. Statistical Methods in Biology and Agriculture (2)**

Registration at any time. \$14 (and \$5 supplies fee) MESSRS. POPE and WADLEY

This course uses Snedecor's textbook *Statistical Methods* (not included in supplies fee), and follows its outline largely but not absolutely. Each of the 15 lessons consists of a discussion, a textbook assignment, questions, and problems. The reports are returned with corrections and comments. Subjects discussed include simple variation, regression and correlation, analysis of variance and covariance, chi-square, multiple and curvilinear correlation, applications to sampling and experimental design. Practical application of methods is kept to the front. Facility in the use of arithmetic and simple algebra is necessary.

[] Not given 1943-44.

514C. Least Squares (3)

Registration at any time. \$21 (and \$5 supplies fee)

MR. LIEBERMAN

A course of assignments in Deming's *Statistical Adjustment of Data*. The reports will be returned with comments. Topics: the nature of statistical analysis, simple and complex problems in curve fitting, applied to the social sciences and to geodetic adjustments. Adjustment of observations with both variables subject to error. Analysis of patterns, use of the t-test, chi-test, analysis of variance. Adjustment of frequencies in sample surveys. Examples and exercises in situations commonly met in government research and industrial development.

Prerequisites: An intermediate course in statistics; training in one of the sciences.

721. Operation of Statistical Studies (3) Each semester

Tu 7-10 beginning Sept. 29; Feb. 1. \$21

MR. STAUDT and STAFF

Designed to help facilitate the use of existing tabulation equipment, and to teach the most effective use of hand tabulations to gain speed and to relieve machine shortage. Topics: processing of data prior to tabulation; different varieties of tabulating equipment available in Washington; machine specifications for tabulation designs; special attention to the Census unit tabulators; peripheral punch cards; peg board; hand sorting devices; machine controls; training and supervision of the personnel in a tabulation division; design and supervision of hand tabulations; estimating time and costs; sample verification of processing.

515. Correlation Analysis (2) Spring

Tu 7-9 beginning Feb. 1. \$14

MRS. HAGOOD

An intermediate course in the analysis of relationships, with emphasis on the selection of appropriate methods for particular types of problems. Analysis of variance and covariance, multiple and partial correlation, component analysis, with special reference to application and interpretation in the social sciences.

Prerequisite: Statistics 127.

[722.] Processing of Sample and Complete Surveys

MR. HAUSER

516. Intermediate Statistics (2) Year, credit each semester

M 6-8 beginning Jan. 31. \$14 a semester

MR. TEPPING

After a review of elementary principles and methods, a critical study is made of various topics, the purpose being to lay a foundation for effective work in statistical practice and for advanced study. Special attention is given to sampling and the uses of sample data.

Prerequisite: Statistics 127.

[723.] Design and Analysis of Complex Experiments

MR. BRANDT

724. Methods of Applied Statistics (3) Fall

Th 7-10 beginning Oct. 7. \$21

MR. DEMING

Statistical applications mainly from the viewpoint of the requirements of government and industrial sampling. Applications to problems in population sampling, inventories, sociology, biology, agriculture, and industrial control of quality. Some probability and distribution theory, with investigations into the assumptions underlying the application thereof. The Shewhart criterion of randomness. Stability and statistical control. Application of control charts. Statistical methods for reducing inspection, reducing rejections and setting tolerances. Single, double, and multiple sampling for control and acceptance purposes.

Prerequisites: A first course in statistics. Knowledge of some particular field in the natural or social sciences.

725. Introduction to Mathematical Statistics (3) Spring

Th 7-10 beginning Feb. 3. \$21

MR. DEMING

An introductory course in the theory and application of mathematical statistics. Calculus will be reviewed as necessary. The point binomial, Poisson exponential, the Type III and normal limits. Student's distribution. Use of the Gamma and Beta functions. Statistics of a single sample. Statistics of two or more samples. Fisher's distribution of z ; analysis of variance. Various tests. Errors of the first and second kinds (Shewhart's, Neyman-Pearson). Bayes and inverse probability. Confidence intervals. Fiducial probability. Practical conditions necessary for validity of application. Interpretation of results; history of mathematical statistics.

Prerequisites: Calculus; a first course in statistics, or equivalent.

[726.] Interpretation of Statistical Calculations (2)

MR. STURGES

[] Not given 1943-44.

727. Planning of Statistical Surveys (2) Fall

Tu 8-10 beginning Sept. 28 (alternate years). \$14

MR. HAUSER

The design of schedules, definition of terms, preparation of instructions, estimation of costs, and plans of field organization for complete or sample social and economic surveys.

Prerequisites: A year of statistics, training in sociology, business, or economics.

[729.] Population Statistics

MR. HAUSER

***730. Psychometric Methods and Theory (2) Year, credit each semester**

6:30-8:30 beginning Tu Sept. 28; F Feb. 4. \$14 a semester LT. COL. RICHARDSON

Logical background of mental measurement: theories of quantification, postulates for a complete system of mental measurement, similarities and differences to physical measurement; linear, systems of measurement; examination of the concept of linearity; the classical and modern psychophysical methods and their mathematical correlates; test theory: reliability, validity, interpretation of test results, including derivation from basic principles of all necessary formulae; relation of psychophysics to test theory; attitude measurement; multidimensional psychophysics; elements of factor analysis.

Prerequisite: Either one year of college mathematics including analytic geometry, or a course in mathematical statistics, but preferably both.

[731.] Least Squares and Curve Fitting

MR. DEMING

[732.] Sampling in Social and Economic Surveys

MR. FRANKEL and LT. STOCK

[733.] Theory of Sampling

MESSRS. CORNFIELD and W. D. EVANS

[734.] Statistical Methods for Research Workers

MESSRS. MADOW and HURWITZ

735. Theory of Sample Surveys (2) Year, credit each semester

W 8-10 beginning Sept. 29; Feb. 2. \$14 a semester

MESSRS. MADOW and HURWITZ

History of sampling in social surveys. The use of statistical control in improving the quality and efficiency of the estimates. Calculation of sampling errors. Random, stratified random, purposive, double and systematic sampling. Cost function, choice of sampling unit; size and type of sample necessary to attain a stated degree of precision, and the distinction between precision and accuracy. The theory of probability is developed as necessary. The contributions of Fisher, Neyman, Yates, Cochran, and others are studied.

Prerequisites: Introduction to Statistical Analysis, 1st and 2d half; calculus.

736. Techniques of Interviewing and Questionnaire Construction (2) Fall

Tu 7-9 beginning Sept. 28. \$14

MESSRS. LIKERT and CANNELL

Study of the theory and practice of interviewing and questionnaire construction with special emphasis on investigation of attitudes as used in public attitude research. Consideration is given

[] Not given 1943-44.

to various interviewing methods, including interviewing as applied to personnel work and counseling, and to principles of questionnaire construction. Emphasis is laid on practical field procedures and problems.

[737.] Statistics of Crop Estimating

Labor Statistics¹ (3) Fall

Th 8:20-10:30 beginning Sept. 23. \$30

MR. PERLMAN

*739. Multivariate Analysis (3) Year, credit each semester

M 7-10 beginning Sept. 27; Jan. 31. \$21 a semester

MR. GIRSHICK

Function theory is reviewed as necessary. Some theorems on probability; theorems on mean value. Moment generating functions; the characteristic function. Multivariate normal distributions; joint moments of sample variances, and covariances. Sampling from a bivariate normal population. Tests of significance; problems of estimation. Joint distribution of variance and covariance; distribution of the correlation coefficient when the population correlation is and is not zero. Least squares; classical applications; relation to maximum likelihood. Distribution of the multiple correlation coefficient. Orthogonal polynomials. Factor and analysis. Canonical correlation. Non-normal distributions. Applications.

Prerequisites: A course in advanced statistics; calculus, and linear algebra, or equivalent.

[740.] Analysis of Variance (Alternate years)

MR. GIRSHICK

[741.] Theory and Application of the Characteristic Function (Every three years)

MAJOR KULLBACK

[742.] Modern Statistical Theories

LT. DALY

745. Seminars in Sampling and Statistical Inference

Meetings are held approximately monthly.

MR. DEMING

This is not a credit course, and no fee is charged; registration, however, is required. Applications should be sent in writing to the Director. Notices regarding meetings are mailed to those who register.

[746.] Statistical Inference

MR. DEMING

(¹ American University course. See A.U. catalog).

[] Not given 1943-44.

Department of Office Techniques and Operations

DEPARTMENTAL COMMITTEE

MR. GRADY, Chairman

CLERICAL-ADMINISTRATIVE PROCEDURES

The courses described under Clerical-Administrative Procedures are closely related to those offered in the Department of Public Administration and are an integral part of the program leading to the Certified Statement of Accomplishment in Administrative Procedures (see Department of Public Administration for details). They are practical, how-to-do-it courses chiefly of interest to persons in grade CAF-7 positions, or below, who are either working with these procedures, or who hope to train themselves for such positions, or positions requiring some familiarity with more than one of these procedural subjects (e.g., administrative assistants and head clerks).

Note: See page 23 for explanation of course symbols.

408. Administrative Procedure (2) Each semester

Sec. I Tu 6-8 beginning Oct. 5; Feb. 8. \$12
Sec. II F 6-8 beginning Oct. 8; Feb. 11. \$12

Intended for persons who wish to become Head Clerks or Administrative Assistants and who wish to organize their knowledge and experience in this field with that in view. Deals with practical aspects of the day-to-day operations of the chief clerk and administrative assistant. Emphasis is placed upon matters for which these persons ordinarily are responsible, such as preparation of budget data, procedural planning, personnel actions, orientation and assignment of new employees, and supervision. The relationship of these functions to specialized services offered by the central personnel, budget, and general service units are also discussed.

409. Administrative Procedure (2) Each semester

F 6-8 beginning Oct. 1; Feb. 4. \$12 MESSRS. GORDON and THORSON

Same as that above except that planning, procedure, relationships, judgment and analysis of factors involved, including case problems treated, are presented at a higher level.

410. Federal Auditing Procedure (2) Each semester

Tu 6-8 beginning Sept. 28: Feb. 1, \$12 MESSRS. CRUIKSHANK and KYTTLE

This short, intensive course is designed particularly to train audit clerks drawn from among employees now working in the lower grades as clerks, typists, machine operators, etc., and to assist audit clerks in their present and prospective positions. It embraces explanations of, discussions on, and practice work with the most important types of government vouchers and covers certain related procedures and documents. The manual used outlines in detail the various procedures.

The course covers general basic principles and definitions of terms; use of standard forms involved; General Accounting Office exceptions, and preparation of replies thereto; administrative suspensions and disallowances; application of statutes, regulations and the Comptroller General's decisions to auditing; special correspondence required in connection with such work; claims and adjustments; purchase order procedures; tax exemption; letters of authorization and travel authority; per diem allowances and computations; methods of travel; and the actual audit of Standard Form 1012 "Reimbursement" vouchers and Standard Form 1034 "Purchase" vouchers.

NOTE: Persons who want a short, sped-up approach limited to minimum requirements should take this course. Persons who want more thorough training and a more comprehensive coverage of auditing procedures should take the full-year course (described immediately below), beginning in September, 1943.

410C. Federal Auditing Procedure (2)

Registration any time. \$12 (and \$5 supplies fee)

MRS. MARKS

Same course content as that covered in 410 above.

411. Auditing Procedure (2) Year, credit each semester

Sec. I. M 6-8 beginning Sept. 27; Jan. 31. \$12 a semester MR. CRUIKSHANK

Sec. II. Tu 6-8 beginning Sept. 28; Feb. 1. \$12 a semester MR. KYTTLE

Similar to the course above but more thorough in treatment of the subject. Designed to assist audit clerks in present and prospective positions and to enable government employees working in the lower grades as clerks, typists, etc., to fit themselves for more responsible and remunerative positions. It embraces explanations of, discussions on, and practice work with all types of government vouchers and related documents. The manual used outlines in detail all the various procedures. During the first semester, the course covers general principles and definition of terms; use of Standard Forms involved; purchase vouchers; claims and adjustments; General Accounting Office exceptions; formal and informal contracts; relation of procurement to auditing; tax exemption; transportation vouchers; suspensions and disallowances on all types of vouchers. During the second semester, the course covers letters of authorization and travel authority; per diem computations and allowances; methods of travel; reimbursement vouchers; pay rolls; advertising vouchers; adjustment vouchers; application of statutes, regulations and Comptroller General's decisions to auditing; collections and deposits; preparation of replies to General Accounting Office exceptions, and correspondence in connection with auditing.

412. Federal Accounting Procedure (2) Each semester

Tu 6-8 beginning Sept. 28; Feb. 1. \$12 MESSRS. W. D. PATRICK and GRANT

Designed particularly to train accounting clerks through instruction of employees now working in lower grades and to assist accounting clerks in present and prospective positions. It embraces explanation of, discussion on, and practice work with the basic ledgers (allotment ledger, objective classification ledger, and general ledger) maintained in connection with funds made available to Federal agencies. Appropriation, apportionment, allotment, disbursement, collection, and reporting processes will be discussed and the relationship between administrative accounts and the accounts kept by the Treasury Department and the General Accounting Office explained. (A more advanced course, Federal Government Accounting, is offered in the Department of Public Administration).

413. Office Management (2) Each semester

F 6-8 beginning Oct. 1; Feb. 4. \$12

MR. BRAUM

Includes office layout, office housekeeping methods, formulation of office policy, organization of communications and records, work planning and operational analysis, utilization of available facilities, care and operation of office equipment, employee orientation and supervisory techniques, methods of securing employee participation, work evaluation and employee rating. The reference text is "Textbook of Office Management" by Leffingwell and Robinson.

414. Federal Personnel Procedure (2) Each semester

F 6-8 beginning Oct. 1; Feb. 4. \$12

MISS MOHAGEN

Deals with basic practices and procedures designed to accomplish appointment, transfer, promotion, demotion, separation, and retirement of Federal employees. The course has three objectives: (1) to keep abreast of current developments in personnel procedures; (2) to become familiar with the legal and administrative background of such procedures (statutes, executive orders, decisions of the Comptroller General, the Civil Service Commission, and the War Manpower Commission, Administrative Orders, etc.); and (3) to visualize the constant need for streamlining procedures in the interests of simplicity and efficiency.

414C. Federal Personnel Procedure (2)

Registration at any time. \$12 (and \$5 supplies fee)

MISS MOHAGEN

Same course content as that covered above in 414.

415. Federal Purchasing Procedure (1) Fall

W 6-7 beginning Sept. 29. \$6

MR. S. A. SNYDER

417. Federal Communications and Records Management (2) Each semester

Tu-F 6-7:30 beginning Sept. 28; Feb. 1 and continuing for 20 sessions. \$12

MESSRS. DONALDSON, MULLER, and C. T. SMITH

Mails, files, and communications procedures. The course embraces instruction in (1) communications, including mail handling, telegrams, messenger service; (2) records management, including planning of procedure in records units, subject filing, classification techniques, briefing and cross indexing, sorting and preparation of material, folder and guide arrangement, retirement of material to inactive status, searching, tickler systems, arrangement of offices, equipment and filing materials.

ENGLISH FOR LETTERS AND REPORTS

418. Practical English Usage (2) Each semester

Tu 6-8 beginning Sept. 28; Feb. 1. \$12

MRS. WILLIAMS

This course enables students through practice to master the fundamentals of correct English. Troublesome problems of English usage, sentence structure, choice of words, style, and grammar, are studied as aids to clear and forceful writing of letters, memoranda, and reports.

419. Vocabulary Building (2) Each semester

M 6-8 beginning Sept. 27; Jan. 31. \$12

MRS. PEASE

Designed to help writers and speakers express ideas clearly and attractively. It embraces word study and selection, diacritical markings, synonyms and antonyms, prefixes and suffixes, usage exercises, and other means of developing a broad and useful command of words.

419C. Vocabulary Building (2)

Registration any time. \$12 (and \$5 supplies fee)

MRS. PEASE

Same course content as that covered in 419 above.

420. Government Letter Writing (2) Each semester

Tu 6-8 beginning Sept. 28; Feb. 1. \$12

MRS. SAMSON

Accurate, clear, concise, courteous letters from Government agencies to citizens are a practical contribution to efficiency and economy in Government. This course gives students an opportunity to work out the principles of writing effective letters. Practice in writing and class discussion covers the analysis of incoming letters and planning, drafting, and revising replies. Troublesome questions of grammar, idiom, sentence construction, and paragraphing are discussed.

421. Workshop in Effective Government Writing (2) Spring

M 6-8 beginning Jan. 31. \$12

MR. WHITE

Development of clear and forceful expression in reports, letters, memoranda, and other media is the objective of this course. It is a clinic course in which classroom discussion is based upon material written by members of the group. Emphasis is placed on increased skill of expression; planning and organizing material; using words appropriately; effective sentence structure and paragraphing; and related factors. Assignments are made in both reading and writing. Persons taking this course should have had courses in Practical English Usage, Vocabulary Building, Letter Writing, or their equivalent.

422C. Methods in Conveying Ideas (2)

(Formerly: Foundation Methods of Presentation) MESSRS. VAN DERSAL, PRYOR, Registration at any time. \$12 (and \$5 supplies fee) and EISELE

Most USDA field agents, supervisors, and executives are concerned with the problem of "getting ideas and programs across" to individuals and to groups. This course is a critical appraisal of the methods most useful in conveying ideas, and deals with conference methods, round-table discussions, letter-writing, report preparation, demonstrations, writing for farm newspapers and magazines, best ways of presenting statistics, and use of blackboard, slides, motion pictures and other visual aids. From a wide variety of sources, the course provides materials on how to select and appraise the most effective tools of communication and education.

SECRETARIAL PRACTICES

425. Secretarial Practices (2) Fall

Tu 6-8 beginning Sept. 28. \$12

Lt. (j.g.) HATTERY

426. Advanced Secretarial Practices (2) Spring

Th 6:30-8:30 beginning Feb. 3. \$12

MRS. COFFMAN

This course emphasizes techniques of effective performance of non-stenographic duties and responsibilities of the secretary; personal qualities necessary for the private secretary; amenities of the vocation; and relation of the principles of secretarial work to office organization. Classroom discussions are supplemented by actual secretarial practice.

Prerequisite: Secretarial Practices or equivalent.

SHORTHAND

These courses are designed to furnish Federal employees an opportunity to follow a program of training for stenographic careers in the Federal service. While each course represents a separate unit of study, with emphasis on material used in the Federal service, the proper sequence of courses insures a sound foundation for successfully qualifying for the various grades and classifications of stenographers in the Federal service.

Gregg courses designated "functional" differ from other courses in the method of study. The functional method is the reading approach; familiarity with the outlines of the system is gained by reading and writing a large volume of graded material. The standard, or manual, method is the traditional method of studying the principles for writing the outlines, practicing the outlines, and reading and writing them from dictation. Under each system home study is required to attain goals set in course descriptions. Amount of study required varies according to the learning habits and individual goals of students.

Students finishing the beginning functional class may continue with intermediate functional or take a manual theory review. Either "Intermediate Functional" or "Gregg, 70 to 100 Words" will serve equally well as rapid review for the student who has not applied his shorthand knowledge for a long time, or has used it so little that he feels uncertain about applying his knowledge to practical office dictation. Because the "Gregg, 100 to 150 Words" course is an intensive course on technical material, students should have a sound foundation in theory and be able to write 100 words a minute with a 95 percent accurate transcript before registering for this course.

As a general guide to assist employees who wish to plan a course of study to build for a stenographic or stenographic-reporting career in the Federal service the following parallels are drawn:

<i>Course</i>	<i>Goal</i>	<i>Prerequisites</i>
I. BEGINNING GREGG (Functional) BEGINNING GREGG (Manual)	Knowledge of theory, with writing ability of 80 words a minute on familiar material	For those who have not studied shorthand, or for those who have some knowledge of shorthand but have not completed a theory course
II. INTERMEDIATE GREGG (Functional) GREGG, 70 to 100 words PITMAN, 70 to 100 words	Theory review; 80 to 100 words a minute on new, standard material	For those who have completed a course in I or an equivalent theory course, or for those who have lost writing facility through limited use or long disuse
III. GREGG, 100 to 150 words PITMAN, 100 to 130 words	Ability to take difficult dictation at rapid rate; to record full secretarial report of conferences; and to record telephone conversations	For those who have completed a course in I and II or equivalent theory and dictation courses, and who have a minimum speed of 100 words on new, standard material
IV. GREGG, 150 to 175 words	Recording of conferences, hearings, 50 percent verbatim (or more); beginning reporting	For those who have qualified on 140 standard word test
V. GREGG, 175 words and up	Verbatim reporting	For those who have qualified on 175 word standard test or 160 word test plus additional experience and training

429. Beginning Gregg (Functional) (3) Each semester

M-Tu-Th 6:30-7:30 beginning Sept. 27; Jan. 31. \$18

MISS LAMB

428. Beginning Gregg (Manual) (3) Each semester

Tu-W-F 6:30-7:30 beginning Sept. 28; Feb. 1. \$18

MRS. EVANS

430. Intermediate Gregg (Functional) (3) Each semester

M-Tu-Th 7:30-8:30 beginning Sept. 27; Jan. 31. \$18

MR. A. PATRICK

431. Gregg, 70 to 100 words (2) Each semester

Tu 6-8 beginning Sept. 28; Feb. 1. \$12

MRS. COFFMAN

433. Pitman, 70 to 100 words (2) Each semester

Tu 6-8 beginning Sept. 28; Feb. 1. \$12

MRS. BARRY

Special emphasis on fundamental principles of phrasing; use of recurring words; government vocabulary; increased legibility and accuracy.

432. Gregg, 100 to 130 words (2) Each semester

W 6:30-8:30 beginning Sept. 29; Feb. 2. \$12

MR. A. PATRICK

434. Pitman, 100 to 130 words (2) Each semester

F 6-8 beginning Oct. 1; Feb. 4. \$12

MRS. BARRY

Students able to exceed 130-word speed are given ample opportunity. Theory of phraseology; use of ticks; theory and use of expedients including principles of omission, alternatives and consecutives, etc. One hour dictation per week from Congressional Record as basis for application of phrasing principles; opportunity for regular practice from Victrola records—times to be arranged.

435. Reporting—Gregg, 150 to 175 words (4) Each semester

M-W 7-9 beginning Sept. 27; Jan. 31. \$24

MR. ROMAGNA

436. Advanced Reporting—Gregg, 175 words and up (4)

Spring

M-W 7-9 beginning Jan. 31. \$24

MR. ROMAGNA

Combined with Reporting 435 for drill and speed dictation in technical vocabulary.

438. Shorthand in Spanish (2) Fall

Tu 6:30-8:30 beginning Sept. 28. \$12

MISS BAUER

An elementary course covering basic principles and outlines of Spanish Gregg Shorthand Manual and progressive dictation in Spanish through supplemental exercises and business correspondence; emphasis on accuracy.

Prerequisite: Knowledge of Spanish.

439. Advanced Shorthand in Spanish (2) Spring

Tu 6:30-8:30 beginning Feb. 1. \$12

MISS BAUER

Dictation of business letters and commercial articles on Latin American subjects; reading of notes; incidental review of Spanish Gregg Shorthand Manual.

Prerequisite: Shorthand in Spanish.

MACHINE OPERATION

87. Multilith Press Operation (0) Each semester

Tu 6:30-9:30 beginning Sept. 28; Feb. 1. \$10

MR. HARBIN

When practice machine operation begins, other days and hours may be arranged, extending over whatever time is necessary to complete 80 hours of instruction. This course is for persons who wish to become multilith press operators. It includes the theory and practice of offset duplicating processes, as related to machine operations. Instruction in the operation of, and adjustments on, the Multilith and Davidson presses. Fifty hours of actual operation under genuine job conditions. Enrollment limited to 15.

88. Photostat Operation (0) Each semester

Tu-Th 6-8:30 beginning Sept. 27; Jan. 31. \$10

MR. PURDY

If students later agree to more frequent meetings, the 80 hours of required instruction and practice may be completed in considerably less than the 16 weeks contemplated under the above schedule.

Intended for persons who wish to become senior photostat operators. Includes theory and practice of processing photostats as related to machine operations. Instruction in the operation of, and adjustments on, various types of machines, including Photostat and Rectograph machines, both automatic and darkroom. Fifty hours of actual operation.

Machine Tabulation

(See Mathematics and Statistics 128)

Advanced Study of Tabulating Equipment

(See Mathematics and Statistics 130)

Punch Card Tabulation Procedures

(See Mathematics and Statistics 129)

Department of Physical Sciences

DEPARTMENTAL COMMITTEE

MR. KELLOGG, Chairman

MR. HAIG

MISS STIEBELING

MR. MAY

MR. SHOWALTER

Note: See page 23 for explanation of course symbols.

144. History of Science (2) Year, credit each semester

W 7-9 beginning Sept. 29; Feb. 2. \$12 a semester

MR. HEYL

Treated from the point of view that science is an organized and correlated body of knowledge, as distinguished from an uncorrelated accumulation of facts. In this sense, the history of science may be regarded as the history of the development of human thought. From this aspect the subject is one of considerable breadth.

Review of the development of the principal branches of science—astronomy, physics, chemistry, geology, biology—showing that in each of these branches, considered broadly, the development has followed parallel lines laid down by the development of human thought. Attention is given leading figures and chief contributors in each of these branches. Reference is made to related writings, particularly those of the early workers, because the development of a subject is more clearly shown in its early stages than later, when it has become more intricate and complex.

NAVIGATION

145. Navigation (3) Each semester

F 6:30-9:30 beginning Oct. 1; Feb. 4. \$18. (Materials and books cost about \$6.)

MR. LOKERSON

Limited to 20, this course concerns essential principles of practical navigation, "off soundings" (exclusive of inland and coastal piloting, which is covered in Piloting, described below).

Dead Reckoning: Includes definitions, charts, plotting, records, allowance of errors of the magnetic and gyro compasses, ocean currents, and plane, mid-latitude, Mercator, and Great Circle sailing.

Celestial Navigation: Includes fundamental definitions and principles of astronomy underlying the navigation of ships and aircraft; usage of the sextant and chronometer, time, and the nautical almanac, corrections of observed altitudes, the determination of latitude and of position at sea by lines of position computed by H.O. 211 using G.H.A., and identification of unknown navigational stars.

Prerequisite: High-school trigonometry and logarithms.

146. Piloting (3) Each semester

Tu 7:30-10:30 beginning Sept. 28; Feb. 1. \$18. (Materials and books will cost about \$10.)

MR. HANN

Covers essential principles involved in inland and coastal piloting. Practical problems and chart work supplement discussion. Subjects covered include the mariner's compass and its errors; use of Napier diagrams; tides; currents; speed curves, and current diagrams; aids to navigation; determination of position by various methods including bearings on one or more objects, cross bearings, and vertical and horizontal sextant angles; fixing position by the use of angles and bearings. Illustrations of the application of these principles to aerial navigation will conclude the course. Limited to 15.

CHEMISTRY

147. General (Inorganic) Chemistry (2) Year, credit each semester

F 6-8 beginning Oct. 1; Feb. 4. \$12 a semester

MR. CARTER

Refresher course designed for students who desire a general knowledge of the subject and those who wish to bring their knowledge up to date. Aim of the course is to give students a better comprehension of the chemical aspects of our environment. The course consists of a series of lectures covering the concepts, principles, facts, and applications of general chemistry. Some organic chemistry is included. No individual laboratory work.

148. Organic Chemistry (2) Year, credit each semester

Th 6-8 beginning Sept. 30; Feb. 3. (Refresher course.) \$12 a semester

MR. BOWEN

Fundamental principles of general organic chemistry are reviewed. Such topics as classification, nomenclature, type reactions, and structure will be considered. Historically important discoveries are correlated with the development of the subject, and emphasis is placed upon the treatment of compounds or classes of compounds that are industrially, medically, or biologically important. The first semester is devoted to consideration of the aliphatic series; the second semester to the aromatic and heterocyclic series. Recent progress in the chemistry of sterols and vitamins is given.

Prerequisite: One year general chemistry.

149. Physical Chemistry (2) Year, credit each semester

Tu 6-8 beginning Sept. 28; Feb. 1. \$12 a semester

MR. HAMER

Fundamental laws of chemical reactions; factors involved in determination of extent, duration, and speed of chemical reactions. Effect of heat and of light of different wave lengths on chemical reactions; properties and structure of gases, liquids, crystals, amorphous substances, colloids, and solutions in relation to their chemical behavior. Other topics include chemical equilibria, atomic and kinetic theories, the phase rule, isotopes, radioactivity, electronic theory of valence, general physicochemical laboratory methods, and electrochemistry including a study of electrode potentials, polarization and electrolysis.

Prerequisites: One year general chemistry; one year calculus; or permission of the instructor.

522. Physiological Chemistry (2) Year, credit each semester
 W 6-8 beginning Sept. 29; Feb. 2. \$14 a semester

MR. CALVERY

Lecture course on principles of biochemistry. It deals with the chemistry of proteins, fats, and carbohydrates, general chemical composition of animal tissues, e.g., muscle, nerve, milk, and blood; brief discussion of enzymes of the gastro-intestinal tract; digestion and absorption of principal foodstuffs; metabolism of proteins, fats, and carbohydrates; mineral metabolism; chemical constituents of urine; and general discussion of the chemistry and physiology of the vitamins and hormones concludes the course.

Prerequisites: One year general chemistry; one year organic.

762. Electrochemistry (2) Year, credit each semester

F 6-8 beginning Oct. 1; Feb. 4. \$14 a semester

MR. HAMER

Lecture course on fundamentals of electrochemistry. It deals with a study of coulometers, laws of electrolysis, electrolytic conductivity, transference numbers, mechanism of galvanic cells, electrode potentials, potentiometric and conductometric titrations, polarograph, diffusion currents, electrokinetic phenomena including electrophoresis and electro-osmosis, ionization constants, determinations of pH or hydrogen-ion activity, and the passivity and overvoltage of electrodes. Problems involved in deposition and corrosion of metals, and factors involved in electroplating, electrodeposition, electropolishing, and in electrolytic oxidation reduction are studied briefly.

Prerequisites: One year general chemistry; one semester of physical chemistry, or consent of the instructor.

Glass Blowing

(See Engineering and Mechanical Arts 188)

GEOGRAPHY AND GEOLOGY

Economic Geography and Transportation of Latin America¹
 (3) Spring

M 8:20-10:30 beginning Feb. 7. \$30

MR. HOMBERGER

[150.] Physiography of the United States

MR. SHARPE

[151.] Geography of the Pacific Islands

(See also Regional Studies—Social Sciences)

MR. FOSBERG

168. Physical Climatology and Geography (2) Fall

M 5:30-7:30 beginning Oct. 4. \$12

MR. FLETCHER

Classes will meet in conference room of Leary Building (U. S. Weather Bureau), 24th and M Streets, N.W.

The solar system, its components, cosmic relationships and theories as to its origin; the earth, its form and motions, its relationship to the solar system; the tides; map projections and their uses, map reading and the use of coordinates for place location; standard time and its determination; the atmosphere, its composition and extent, solar insulation, the planetary wind systems and world climate; the hydrosphere, its composition and extent, the great oceans, the great lakes and their formation, the great hydrographic systems, ground water, the hydrologic graphic systems, the hydrologic cycles; the lithosphere, its composition and extent, major land forms, minor land forms and erosion by wind, water, and ice; isostasy.

THEORY OF ELECTRICAL OSCILLATIONS AND CIRCUITS

769. Electrical Oscillations (2) Year, credit each semester

Tu 6-8 beginning Sept. 28; Feb. 1. \$14 a semester

MR. COHEN

Theory of electrical oscillations and their application to the communication art. A mathematical analysis is presented of circuit problems of localized inductances and capacity and distributed inductances and capacity; also electronic circuits for the generation and reception of radio signals.

(¹ American University course. See A.U. catalog).

[] Not given 1943-44.

768. Heaviside's Electrical Circuit Theory (2) Year, credit each semester

Th 6-8 beginning Sept. 30; Feb. 3. \$14 a semester

MR. COHEN

Introductory course to the theories of operational calculus and their application to engineering problems. Special emphasis will be given to Heaviside's methods for the solution of electric circuit problems.

METALLURGY

152. Principles of Physical Metallurgy (2) Fall

W 8-10 beginning Sept. 29. \$12

MR. LORING

Development, meaning, and use of equilibrium diagrams for binary alloys. Iron-carbon diagrams and their relation to cast iron and steel, and to the critical points important in heat-treating ferrous alloys. Steel-treating processes depending on non-equilibrium conditions, including the S-curve. Alloy steels. Aging and precipitation hardening. Segregation and other ingot defects. Mechanical and physical tests, including the interpretation of micrographs. Non-ferrous alloys of industrial importance.

525. Production Metallurgy (2) Fall

M 6-8 beginning Sept. 27. \$14

MR. LORING

The winning of metals from ores beginning with iron and steel. Blast furnace, open hearth, and Bessemer reactions. Influence of methods of manufacture on final properties. Non-ferrous metals including copper, lead, zinc, gold and some of the minor metals. Latest methods of concentration, roasting, smelting, refining, and electrolytic deposition. Chemical and physical principles as well as practices are stressed.

526. Advanced Physical Metallurgy (2) Spring

W 8-10 beginning Feb. 2. \$14

MR. LORING

Basic concepts of the physics of metals are discussed in order to develop a better understanding of the common mechanical tests and manufacturing processes. Topics include: definition of a metal; introduction to the crystalline nature of matter; classification of metallic elements according to crystalline structure; relationship between crystalline structure and physical properties; the equilibrium diagram and its relation to physical properties and crystalline structure; introduction to X-ray metallurgy with calculations from diffraction patterns of metals (illustrated); X-ray evidence of cold working and recrystallization; interval stresses in metals; plastic deformation; theory of metal hardening, ferrous and non-ferrous; advanced physical testing of metals covering fatigue, creep, and damping capacity. The class selects for discussion manufacturing processes of most general interest.

766. Engineering Alloys (2) Spring

W 6-8 beginning Feb. 2. \$14

MR. LORING

Manufacture, heat treatment, physical testing, and engineering usage of plain carbon, alloy, and special steels, brasses, bronzes, and the light alloys of aluminum and magnesium. Recent trends in specifications of alloy properties are included. Alloys for aircraft receive special attention.

SOIL SCIENCE

531. Soils: Their Morphology, Genesis, and Classification (3) Spring

Tu-Th 6-7:30 beginning Feb. 1. \$21

MR. KELLOGG

The nature of soils and the broad principles governing their behavior are first discussed, followed by consideration of soil morphology, formation, and classification. Particular attention is given to characteristics of the great soil groups and their genesis in relationship to the physical and biological forces of the environment. Soil geography of the United States is dealt with broadly, but some examples from other parts of the world are used. Throughout the course, relationships of soil characteristics to agricultural development, soil use and conservation, and patterns of human occupancy are emphasized.

Prerequisites: Freshman chemistry or its equivalent. Previous or collateral reading in plant physiology, geology, geography, and logic would be helpful, but not essential.

156. Soil Conservation (2) Fall

F 6-8 beginning Oct. 1. \$12

MR. STEELE

Physical aspects of soil conservation problems. Extent, causes, and results of soil erosion. Physical capability of land for use. Soil-erosion control, including the need for a wide variety of technical practices and measures brought together in a farm conservation plan. Soil conservation research and operations in the main physical and agricultural regions of the United States.

157. Soil Fertility (3) Fall

W-F 6-7:30 beginning Sept. 29. \$18

MR. ABLEITER

Factors that determine the fertility of the soil and its response to fertilization, liming, green manuring, and other practices are developed. Attention is given to the determination of fertilizer needs and the use of fertilizers in relation to soil conditions, crops grown, and the development of a management system on the individual farm. The properties and use of commercial fertilizer materials and mixtures are discussed.

[767.] Seminar: Soils and Planning

MR. KELLOGG

METEOROLOGY

With the growing importance of aircraft operations in military and civilian activities, meteorology is undergoing a rapid expansion. Before proceeding on his flight, the pilot must consult the meteorologist regarding upper-air winds, cloud ceiling, threat of icing and thunderstorms, etc., along his route. Opportunities for employment of meteorologists have expanded greatly recently and it is expected that this tendency will continue in the future.

The course in Elementary Meteorology is intended for persons who desire a general outlook in meteorology and who are not interested in becoming professional meteorologists. The remaining courses are intended to give a fundamental and comprehensive meteorological background for persons interested in pursuing a career in meteorology. It is suggested that the courses be taken in the general order in which they are listed.

A course in Introductory College Physics is offered for those who need it as a foundation for study in meteorology (see Physics 153).

[158.] Elementary Meteorology

MR. DE MOTS

162. Principles of Meteorology (2) Year, credit each semester

Tu 6-8 beginning Sept. 28; Feb. 1. \$12 a semester

MR. C. B. JOHNSON

A course of a descriptive nature explaining the principles of meteorology essentially on a non-mathematical basis. Especially adapted to preparation for sub-professional employment in the government and to obtaining the basic meteorological knowledge required of a civilian pilot.

[160.] Meteorological Instruments and Observation**[161.] Preparation of Meteorological Charts****163. Comparative Meteorology and Oceanography (2) Fall**

W 6-8 beginning Sept. 29. \$12

MR. JACOBS

Fundamentals of oceanography, using these and basic work in meteorology, in a study of world weather and climate. Aeronautical aspects of climatology are given special attention. Topics include: the physical properties of sea water, radiation and heat balance of the earth;

[] Not given 1943-44.

general and special circulations of the atmosphere and oceans, evaporation and the hydrologic cycle, interactions between sea and atmosphere, air mass climatology, bases for a dynamic climatology, microclimatology, analysis and presentation of meteorologic data and discussions of the regional and time variations in the structure of the atmosphere, winds, salinity, temperature, fog, clouds, visibility, and precipitation.

Prerequisite: Basic course in elementary meteorology or consent of instructor.

155. Elementary Synoptic Weather Analysis (3) Year, credit each semester

W 6-9 beginning Sept. 29; Feb. 2. \$18 a semester

MESSRS. SHOWALTER AND W. M. ROWE

A beginning laboratory course providing experience in the analysis of weather charts of the surface and upper air.

Prerequisite: Principles of Meteorology or equivalent.

159. Physical and Synoptic Meteorology (2) Year, credit each semester

M 6-8 beginning Sept. 27; Jan. 31. \$12 a semester

MR. SHANDS

A course designed for those interested in a career in meteorology. Among the topics covered are: composition and structure of the atmosphere; adiabatic processes; general circulation; air masses and fronts; cyclones and anticyclones; fog; hurricanes; thunderstorms; weather forecasting. Problems involving fundamental units and graphic manipulation are assigned.

Prerequisite: High school diploma with creditable grades in mathematics and physics.

164. Hydrology (2) Fall

F 6-8 beginning Oct. 1. \$12

MR. F. F. SNYDER

Elements of hydrology with particular reference to river and flood forecasting—atmosphere, precipitation, evaporation, transpiration, and streamflow. Theory and application of the unit hydrograph, flood routing, and other modern hydrologic procedures to flood control and flood forecasting problems.

Prerequisite: High school physics.

165. Advanced Hydrology (2) Spring

Th 6-8 beginning Feb. 3. \$12

MR. F. F. SNYDER

Continuation of 164.

Prerequisite: Hydrology 164 or equivalent.

166. Introduction to Dynamic Meteorology (2) Year, credit each semester

W 6-8 beginning Sept. 29; Feb. 2. \$12 a semester

MR. WALSH

Designed to illustrate the use of higher mathematics and physics in the interpretation of meteorological phenomena, and in the development of forecasting techniques.

Prerequisite: Physical and Synoptic Meteorology or equivalent, calculus, or consent of instructor.

529. Weather Analysis and Forecasting (3) Year, credit each semester

Tu 6-9 and Th 6-7 or Th 6-7 and F 6-9, to be arranged at the first class meeting, Sept. 28; Feb. 1. \$21 plus \$3 laboratory fee, a semester

MESSRS. SHOWALTER and PIERCE

Lectures and laboratory. This two-semester course is the natural sequel to Physical and Synoptic Meteorology and provides practical experience in the analysis of various weather charts of sea level and the upper air. Considerable practice is given in preparing weather forecasts from various sea-level and upper-air charts and also from local surface and upper-air data alone.

Prerequisite: Physical and Synoptic Meteorology or permission of the instructor.

[527.] Elementary Statistical Analysis for Meteorologists

[765.] Dynamic Meteorology

PHYSICS

153. Introductory College Physics (3) Year, credit each semester

Tu-F 6:30-8:30 beginning Oct. 5; Feb. 8. \$18 and \$3 laboratory fee, a semester

MR. KENNARD

This course is intended for those having no previous knowledge of the subject, and for those who wish to review the elements. The class meets in the well equipped laboratory of Wilson Teachers College.

First semester: Mechanics—heat—sound.

Second semester: Electricity—light—electronics.

Analytical Mechanics

(See Mathematics and Statistics [706])

Statistical Mechanics and Kinetic Theory

(See Mathematics and Statistics [707])

Thermodynamics

(See Mathematics and Statistics [705])

530. Introduction to Hydrodynamics (2) Fall

F 6-8 beginning Oct. 1. \$14

MR. GARSTENS

Introduction to fundamentals of hydrodynamics. Treatment will be vectorial; a short introduction to vector methods is given. Subject matter covered includes: Euler's equations, equation of continuity, Bernoulli's formula, potential motion, sources and sinks, Cauchy-Riemann equations, stream functions, vortex motion, Navier-Stokes equations for viscous fluids, laminar and turbulent flow, boundary layers. Application to related fields such as aeromechanics, meteorology, etc., is made.

Prerequisite: Differential and Integral Calculus; College Physics.

[] Not given 1943-44.

Department of Public Administration

DEPARTMENTAL COMMITTEE

MR. WOLCOTT, Chairman	MR. THURSTON
MR. COCHRAN	MR. WING
MR. LEWIS	

OPPORTUNITIES FOR STUDY AND WORK

The modern state truly is as its officers are. Competence of personnel, especially managerial personnel, is an urgent present need and an obvious post-war imperative. Assuring and adding to that competence is the sole objective of the Graduate School.

The importance of public administration is apparent in the modern state with its emphasis on services, control, operation, and collective action in the public interest. The more the public service is called upon to assume functions previously exercised by individuals or private enterprise, the greater the importance of the principles and techniques of public administration. The unprecedented and increasing delegation of discretion to administrative agencies has raised unprecedented problems of organization, public consent, and administrative responsibility.

Washington is of necessity the national focal point of all these developments. Many of the ablest and most experienced public administrators are of necessity assembled in Washington. Many of the most competent practitioners of the various specialized branches of administration are likewise concentrated in Washington. Utilizing this unique environment and this unexcelled talent, the Graduate School offers courses geared to demonstrated needs and taught by experienced administrative personnel.

Management problems raised by the war, and aggravated by leave of administrative personnel for military duty, have created an unparalleled demand for trained men and women in all branches of administrative management. The situation has resulted in recruitment of persons from private industry, appointment of persons not so well trained and experienced as in normal times, and the promotion in some cases of meagerly trained personnel at an unusual rate. The demand for good administrative personnel has become so critical that some agencies have felt compelled to take special measures, in the interest of efficiency, to prevent the loss of such personnel through transfers. This is obviously not a normal situation, but it nevertheless illustrates the critical need for more and better training in public administration, particularly in the junior and assistant positions, even in normal times.

SUGGESTIONS FOR PROGRAM OF STUDY

The following courses cover a wide range of approaches for varying levels of responsibility. Some give background and attitude, and some give methods and skill. Some have their objectives high and broad for perspective and knowledge of relationships; some have their objectives comparatively narrow and sharply focused for skill and ability to perform particular tasks. It is hoped that employees will select those courses which supplement and comple-

ment their work assignments rather than concentrate exclusively on more intensive training in the performance of daily tasks.

General. Persons who have not had such a course, or varied administrative experience, should begin with Introduction to Public Administration. This course and other basic work should precede courses in special branches of administration (e.g., personnel or financial administration) in order that such courses may be of maximum usefulness.

Administrative Planning and Procedure. Those with limited training or experience should begin with Administrative Procedure (if in Grade CAF-5 or below) or with Federal Administrative Management.

Personnel Administration. Unless substantial experience can be substituted, the general course, Personnel Administration, should be taken before the specialized courses (such as Position Classification, Selection and Placement, etc.). Persons who are in Grade CAF-5 or below and desire to prepare for personnel work should take Personnel Procedure at the earliest opportunity; they should not attempt to take the specialized courses until they have gained substantial experience in personnel work or have carefully laid a foundation by completing all basic, general courses.

Budgetary Administration. Budget Formulation logically precedes Budget Execution. In purchasing, students qualified to work toward the program for a Certified Statement of Accomplishment in Public Administration should take Governmental Purchasing. It is desirable for other students to take Purchasing Procedure first.

Finance. Students in grades below CAF-5 will find it advantageous to begin with Federal Accounting Procedure or Federal Auditing Procedure. Preparation for higher-level accounting should begin with a year's study of Principles of Accounting, after the completion of which Federal Government Accounting may be taken. Second Year Accounting, Cost Accounting, Auditing, Federal Tax Accounting, Advanced Accounting Problems, and Mathematics of Finance provide advanced training for those who desire to progress further with a general accountancy program. (See program below for Certified Statement of Accomplishment.)

CERTIFIED STATEMENTS OF ACCOMPLISHMENT

Certified Statements of Accomplishment are offered in two fields of public administration—fields representing areas of preparation and application most useful in the public service—and in accounting.

The student who completes one of the programs outlined below is eligible to receive a Certified Statement of Accomplishment bearing the official seal of the School and signed by the Director of the School and by the Chairman of the Department of Public Administration. The Statement is not merely a diploma-like certificate nor simply a transcript of credit, but combines certain features of both. It is a certification that the student has completed a well-rounded course of study preparatory for effective public service in (1) administrative procedures, (2) public administration, or (3) accounting. Courses completed and quality of accomplishment will be recorded on the back of the Statement, which may be used as a personal record of achievement or a public record of qualification.

Certified Statements of Accomplishment are offered in the three fields described below.

I. PUBLIC ADMINISTRATION

Approach

Broad-gauge, essentially long-range approach to develop leadership, perspective, broad outlook, and understanding of the human factors in administration; emphasis on principles, with opportunity for study of some techniques in relation to policy.

Objectives

Ultimately, for policy formulation, improvement of administrative machinery, coordination of operations, and general management and control of large units. Immediately, for initial investigations as a junior member of a staff having the responsibilities named above, for assumption of increasingly difficult and more responsible assignments in these fields, and for supervision and management of small units.

Requirements

1. Bachelor's degree or equivalent. (Note: This requirement may be waived in the case of well-qualified students who have received a Certified Statement of Accomplishment in Administrative Procedures.)
2. Sixteen semester hours of credit in Graduate School courses in public administration, with at least four credits in each of the following fields or combinations of fields:
 - a. General Administration, and Administrative Planning and Procedure.
 - b. Personnel Administration, and Public Relations.
 - c. Budgetary Administration, and Finance.

The program leading to a Certified Statement of Accomplishment in Public Administration should be of special interest to:

1. Persons already employed in responsible administrative positions. Included in this group are many with specialized training who have been transferred to administrative positions from professional positions without training or previous experience in administration.
2. Junior Administrative Assistants and junior administrative technicians of all kinds.
3. Recently recruited Junior Professional Assistants. Those who entered the service with a public administration option may profit from courses both more advanced and more specialized than those taken in college. Those who entered on various professional options and are now employed in such professions can profit very greatly from these courses if they expect, or wish to prepare, to enter into administrative work connected with their professional fields.
4. Employees who wish to broaden their understanding and improve their efficiency through a "tour of duty" by study, in lieu of an actual tour of duty for which they have found no opportunity.
5. Employees with college background who aspire to transfer to a career in administrative management.

II. ADMINISTRATIVE PROCEDURES

Approach

Emphasis on techniques, procedures, methods, but with an attempt to understand and use these means in terms of administrative ends or objectives.

Objectives

Ultimately, for responsible conduct of important "housekeeping" operations of specialized character, direction of small units, performance of most difficult and responsible tasks in the procedural aspects of administration, and the settlement of questions of intermediate importance arising out of current or contemplated operations and not covered by existing regulations or decisions.

Immediately, for effective service in some administrative procedure at the clerical or semi-clerical level, as a means of entrance into the line of promotion leading to the responsibilities named above. (Students already at this level may arrange programs in conformity with their needs.)

Requirements

1. High-school diploma or equivalent.
2. Sixteen semester hours of credit selected from the following Graduate School courses:
 - a. All those offered in the Department of Public Administration (excluding all accounting courses except Federal Government Accounting). A minimum of eight credits must be selected from this group.
 - b. The following offered in the Department of Office Techniques and Operations:
 - (1) Administrative Procedure
 - (2) Purchasing Procedure
 - (3) Federal Auditing Procedure or Auditing Procedure
 - (4) Federal Accounting Procedure
 - (5) Federal Personnel Procedure
 - (6) Office Management
 - (7) Communications and Records Management
 - (8) Government Letter Writing (2 credits only)
 - c. A course in elementary statistics (3 credits)

The program leading to a Certified Statement of Accomplishment in Administrative Procedures should be of special interest to:

1. Persons already employed in administrative work of the procedural type, emphasizing techniques and skills.
2. Employees who aspire to enter administrative work but who, because of lack of college education, find their opportunities in that field greatly limited except at the procedural level. This program of courses is useful for persons with good native ability but limited educational background, because it prepares them for a level of work most likely to be open to them. After they have succeeded in getting into administrative work, perhaps even at the clerical-administrative level, they can then combine their work-experience and study-experience to mutual advantage as progress is made toward greater responsibility. This approach is believed to be better for such persons than the common practice of

attempting to circumvent the usual educational requirements by short-cut concentration on advanced and specialized courses, which are actually preparatory for responsible positions only insofar as they *supplement* broader educational background.

3. Employees who wish to prepare to become Junior Administrative Assistants or to head units concerned with administrative procedures.

III. ACCOUNTING

The Graduate School is interested in offering accounting courses primarily as a means of training for the *public* service. Elementary and advanced accounting courses have been offered by the School for 10 years, and because of increasing demands for advanced work, it is believed that the time has now arrived for offering a coordinated program leading to a Certified Statement of Accomplishment in that field.

The curriculum necessarily includes courses in general accounting because the basic principles are essential for government accounting. The scope of accounting in the Federal service is wide. There are increasing demands for accountants having a knowledge of commercial as well as government accounting. These demands have come as a result of the formation of many government corporations and Federal regulatory agencies. Hence, the accounting program required for a Certified Statement of Accomplishment is broad enough to cover not only the regular appropriation accounting of the Federal Government, but also the accounting training needed for many other governmental activities. The program is comprehensive enough to meet both advanced training for the government service, and also the usual educational requirements for C.P.A. examinations.

Requirements

1. High-school diploma or equivalent.
2. Forty-two semester hours of credit distributed according to the following plan:

REQUIRED COURSES

<i>Accounting</i>	<i>No. of Semesters</i>	<i>Credits (Sem. Hrs.)</i>
Principles of Accounting	2	6
Second Year Accounting	2	6
Cost Accounting	1	3
Auditing	1	3
Federal Government Accounting (Optional for persons not planning to enter Federal accounting work)	1	3
Federal Tax Accounting	1	3
Advanced Accounting Problems	1	3
<i>Related Subjects</i>		
Principles of Economics	2	6
Business Law*	2	6

* Cooperative with American University.

ELECTIVE COURSES

Mathematics of Finance	1	3
Budgetary and Financial Administration	2	4
Survey of Statistics	1	3
or Elementary Statistics	2	4
Federal Accounting Procedure	1	2
Federal Auditing Procedure	1	2
or Auditing Procedure	2	4
Public Finance and Taxation*	1	3
Money and Banking*	1	3
Corporation Finance*	1	3

* Cooperative with American University.

Note: See page 23 for explanation of course symbols.

GENERAL ADMINISTRATION

344. Introduction to Public Administration (3) Each semester

W-F 6-7:30 beginning Sept. 29; Feb. 2. \$18

MR. J. C. RUSSELL

This course is designed to introduce the student to the elements of public administration. Attention will be devoted to the evolution of administrative organization; organizational types: staff, line, and auxiliary agencies and functions; controls of administration; the broadest aspects of personnel selection, classification, training, movement, and relations; budgeting and fiscal control; federal-state relations; administrative legislation and adjudication. The object of the course is to lay a broad foundation for more intensive courses in management.

Conditions of Personality Growth

(See Social Sciences 342)

Social Psychology

(See Social Sciences 822)

618. Management and the Worker in the Public Service (2) Spring

M 6:30-8:30 beginning Jan. 31. \$14

MR. STEWART

The impact of war upon government at all levels enforces re-examination of the respective roles of management and the worker in the public service. This course is designed to provide a review of the present state of these relationships and an indication of probable trends. Special attention given to practical application of basic principles of democracy to all phases of public administrative management. Among subjects considered: nature and function of management in the public service; place of organized labor in the public service; differences between governmental and private employment; dynamics of public service unionism; development of constructive relations with unions; reconciling interests of management and workers; areas of negotiation on administrative policy; applicability of collective bargaining techniques to the public service; problems of employee representation; employee-management collaboration through joint councils; joint production committees; place of unions in developing leadership; and meaning of administrative democracy.

Prerequisite: Bachelor's degree or consent of the instructor.

626A. Federal Administrative Management (2) Each semester

W 6:30-8:30 beginning Sept. 29; Feb. 2. \$14

MR. VAN DYKE

Intended for persons who are or wish to become business managers, administrative officers, and general assistants who work in several fields (budget, fiscal, personnel, and office manage-

ment). Designed to give an introduction to theory to those who have not had an opportunity for this; to give an introduction to practical operations to those who have not had Federal experience. A series of practical problems is assigned. The course involves both lectures and discussions. It deals with principles and practical problems involved in carrying full responsibility for, or an assistant responsibility for, planning, organizing, directing, analyzing, and coordinating the activities of staff services, such as administration, budgeting, personnel, procurement, etc., and for developing and maintaining effective relationships with the agencies and organizations. Registration limited to 40.

Prerequisites: Persons in Grade CAF-5 or above, or those with a graduate or undergraduate major in public administration, whose interest and experience are pointed definitely toward general administration.

626B. Federal Administrative Management (2) Each semester

W 6:30-8:30 beginning Sept. 29; Feb. 2. \$14

MR. STEWART

Same course as above except that seminar approach is used, with special emphasis on problems of policy formulation and execution common to members of the group.

Prerequisite: Grades CAF-9 or above, or graduate or undergraduate major in public administration.

626C. Federal Administrative Management (2)

Registration at any time. \$14 (and \$5 supplies fee)

MESSRS. DOWNIE and
ROHRBAUGH

Same course content as that covered in 626A.

617. Administrative Law and Procedure (2) Year, credit each semester

W 6-8 beginning Sept. 29; Feb. 2. \$14 a semester

MESSRS. SELLERS and
NUTTING

Consideration given to the following subjects: disposition, delegation, and sub-delegation of governmental powers; limitations upon administrative discretion; regulatory procedures (including hearings) of Federal administrative agencies in general and of the Department of Agriculture in particular; recent and current proposals for revision of Federal administrative procedure; and judicial review of administrative action. To the extent possible, administrative procedures of some of the war agencies also are examined.

Prerequisites: Practical experience in a major regulatory activity of the Federal Government or extensive academic training in public administration or public law.

[621.] Federal-State Collaboration

MR. TRUMAN

[345.] Layman's Introduction to Public Law

MR. GLICK

Problems in Government and Administration

(See Social Sciences 583)

ADMINISTRATIVE PLANNING AND PROCEDURE

625. Psychology of Management (2) Fall

W 6-8 beginning Sept. 29. \$14

MR. LIKERT

Major attention is given to those psychological principles that are subject to the control of management, and exercise an important influence on the productivity and job satisfaction of employees. Various philosophies and techniques of management are appraised in the light of recent research on employee attitudes. There will be a brief discussion of procedures available for research in this field.

Administrative Procedure

(See Office Techniques and Operations 408-409)

[] Not given 1943-44.

623. Science of Management (2) Spring

Th 6-8 beginning Feb. 3. \$14

MR. SCHUBACH

Survey of the principles and methods of scientific management as developed originally for factory control and later for general management. Scientific management techniques discussed both for their direct value in increasing production and as factors of morale. Research as guidance for administrative and managerial planning. The course will emphasize the dynamics of organized effort, and consider incentives appropriate to federal administration.

Prerequisite: Open to executives with some training or experience in public or private enterprise; or consent of instructor.

624A. Organizational and Procedural Analysis (2) Fall

F 6-8 beginning Oct. 1. \$14

CAPT. POIS

Deals with techniques employed in analysis of organizational and procedural problems and in the formulation of recommendations for the solution of such problems. Considerable emphasis is placed upon the different sets of circumstances encountered in the course of such analytical work. Specific case studies are presented for discussion. Admission to the course is restricted to persons who have had at least several years administrative experience. Registration cards must be accompanied by a written summary of relevant experience.

624B. Advanced Organizational and Procedural Analysis (2) Spring

F 6-8 beginning Feb. 4. \$14

CAPT. POIS

A continuation of the above course at an advanced level. The subject matter consists almost entirely of case studies illustrating the analysis of different types of organizational and procedural problems. Prerequisites are the same.

PERSONNEL ADMINISTRATION

837. Psychological Aspects of Personnel Administration (2) Fall

Tu 6:30-8:30 beginning Sept. 28. \$14

MESSRS. KNIGHT and TIFFIN

The application of psychology to personnel administration; the significance of individual differences; general principles of employee testing; improvement of merit rating; reduction of accidents; improvements in training methods; and measurement and improvement of employee morale.

Prerequisite: A responsible position in personnel administration or extensive training in the field.

661. Personnel Administration (2) Each semester

M 6-8 beginning Sept. 27; Jan. 31. \$14

To be announced

Deals with personnel problems which arise when people are associated together in a work situation. It is designed to acquaint the student with the basic personnel policies and practices which have been found necessary and useful in coping with these problems. Trends in public personnel administration and its relationship to over-all management are discussed. The course will be helpful to supervisors and administrators who desire a broad understanding of personnel administration and also to students who need foundation for the more specialized courses in the personnel field.

842. Personnel Administration (2) Each semester

M 6-8 beginning Sept. 27; Jan. 31. \$14

MR. KROEGER

A graduate course dealing with the same problems and content described in the undergraduate course listed immediately above.

Prerequisite: Bachelor's degree or employment in personnel work at grade CAF-7 or above.

Federal Personnel Procedure

(See Office Techniques and Operations 414)

Techniques of Interviewing and Questionnaire Construction

(See Mathematics and Statistics 736)

659A. Federal Position Classification (2) Each semester

F 6-8 beginning Oct. 1; Feb. 4. \$14

MR. HILL

An introductory course designed to give the student an understanding of the fundamental concepts of position classification and its uses; the relation of classification to compensation and other phases of personnel administration; the historical background of position classification in the Federal service; an analysis of the Classification Act of 1923 and its amendments and its relation to other personnel processes; position analysis and factors to be considered in the allocation of positions.

Prerequisite: 60 semester hours of college work or consent of the instructor.

659B. Federal Position Classification (2) Each semester

M 6:30-8:30 beginning Sept. 27; Jan. 31. \$14

MR. STAHL

Same course as above; limited to college graduates or those with at least a CAF-7 in classification or other personnel work.

627. Advanced Federal Position Classification (2) Each semester

M 6-8 beginning Sept. 27; Jan. 31. \$14

MESSRS. BUCKLEY and COOPER

A detailed study of Federal position classification based primarily on specific cases. Emphasis will be placed on factors which enter into allocation of positions and the application of such factors in actual and hypothetical classification situations.

Prerequisite: Federal Position Classification or technical classification experience.

838. Seminar in Federal Position Classification (2) Fall

F 6-8 beginning Oct. 1. \$14

MESSRS. BUCKLEY and COOPER

This advanced seminar includes analyses and discussions of: strengths and weaknesses of the present Federal classification system; policy development and execution in position classification, with respect to both intra-agency and agency-Civil Service Commission relationships; and relationships between this and other phases of personnel management, now and in the future. These and related matters are approached through general case problems now facing those carrying executive responsibility in position classification.

Registration is limited to persons carrying primary or secondary responsibility for general personnel, or for classification, programs, or to those who have had the equivalent in training of the other courses offered in this field. Admission by consent of the instructor or Director.

629. Tests and Measurements in Personnel Administration (2) Fall

F 6:30-8:30 beginning Oct. 1. \$14

LT. COL. RICHARDSON and MR. KUDER

Tests of general mental capacities and special aptitudes, their uses and limitations; proficiency and performance tests as related to selection, retention, and dismissal of personnel; relation of job analysis techniques to tests and other tools of personnel administration; test requirements of an adequate system of personnel placement.

663. Legal Aspects of Investigations—Criminal Evidence and Procedure (2) Fall

W 6-8 beginning Sept. 29. \$14

MR. KOEBEL

Designed to provide investigative personnel and those desiring to prepare for such work, a background and insight into the legal aspects of their investigations: what types of evidence to seek; circumstances and conditions under which the evidence is to be obtained in order to have adequate probative value; and how to prepare such evidence for presentation in court or other procedure. Since all investigations are potential sources of prosecution, the requirements of criminal evidence and procedure often reach into the early stages of investigation. The instruction is designed to provide understandable information without overemphasis of technical aspects.

663C. Legal Aspects of Investigations—Criminal Evidence and Procedure (2)

Registration any time. \$14 (and \$5 supplies fee)

MR. KOEBEL

Correspondence course especially adapted to USDA field personnel.

630. Selection and Placement (3) Each semester

Tu 6:30-9:30 beginning Sept. 28; Feb. 1. \$21

MR. MCLEAN

Recruiting, evaluation, probation, placement, and promotion of employees, with special reference to the Federal civil service; lectures and discussions.

631. Employee Counseling (2) Fall

Tu 7-9 beginning Sept. 28. \$14

MISS McGOWAN

Deals with the organization and operation of a program of employee counseling in the Federal service. Methods and techniques of counseling are explored with special emphasis on their use in an employment situation.

The Conditions of Personality Growth

(See Social Sciences 342)

632. Federal Employee Relations (2) Fall

W 6:30-8:30 beginning Sept. 29. \$14

MR. DAVID

For those who have general or direct responsibility for employee relations in the Federal service; its approach is in terms of actual problems facing personnel divisions today and how these may be handled most effectively. It includes the study and appraisal of Government employment and governmental policy towards employee organization; the role of employee relations in public personnel management; employee relation policies of various agencies and types of staff organization; areas and types of collective negotiation; and actual phases of relations, including rights, appeals, methods of handling, etc.

633. Advanced Safety Administration (1) Fall (8 weeks)

Tu 6-8 beginning Sept. 28. \$7

MR. CAMERON

An advanced course dealing with the organization and administration of occupational safety programs both in private industry and in the Federal service. Generally designed to improve administrative and leadership qualities, the course is conducted as a seminar, deals with such subjects as critical analysis and review of procedures and techniques used in the operation of safety programs; review and development of methods for measuring safety accomplishment; preparation of job specifications and procedures for various grades of safety engineers; place of the safety department in the organization; budget requirements and methods for securing executive interest and support; methods for arousing and maintaining employee interest; integrating safety training into job training programs; including safety provisions in the design of new buildings, new machines, new processes.

Prerequisite: This course is designed for persons presently employed as safety directors or assistant safety directors, chief or assistant safety engineers or responsible safety program heads either in the Government service or in private industry.

634. Organizing Agency Training Programs (2) Fall

F 6-8 beginning Oct. 1. \$14

MESSRS. HALL and HENDERSON

Designed to aid those who now have or expect to have responsibility for organizing, directing, and conducting agency-training programs. Solutions are suggested to such problems as getting management to accept responsibility for training, helping supervisors train their employees, determining what training can best be done centrally, selecting appropriate training methods, and the place of the training officer in the organization.

PUBLIC RELATIONS

840. Principles of Public Relations (2) Fall

Tu 8-10 beginning Sept. 28. \$14

MR. WALL

This course concerns itself mainly with problems of public programs, although the principles are equally applicable to public relations problems in industry or business. Public relations is approached as an integral part of the administrative process, rather than as the practice of "press agency," since a sound knowledge of public-relations principles is indispensable to administrators as well as to information technicians. Collateral reading is required, both in reference material and in current events, as background for class discussions. Campaigns designed to meet actual current public relations are worked out in outline by members of the class with the instructor. Enrollment limited to 25.

Prerequisites: College graduation, or undergraduate work in special fields (political science, economics, or psychology) plus experience.

841. Media and Methods in Public Relations (2) Spring

Tu 8-10 beginning Feb. 1. \$14

MR. WALL

Following "Principles of Public Relations," this course will concern itself with actual use of media and methods in applying correct principles to problems of public relations. A basic understanding of the methods and media in public relations, as implements of administration, is useful to the administrator as well as to information technicians. Public-relations campaigns will be developed in detail with members of the class preparing media material and planning methods and activities. The course will be carried on by a combination of discussion, collateral-reference and current-events reading, and actual practice.

Prerequisite and enrollment same as for 840—Principles of Public Relations.

Workshop in Government Radio Programs

(See Languages and Literature 227)

Creative Writing

(See Languages and Literature 224)

Editing

(See Languages and Literature 225)

Writing for Official Purposes

(See Languages and Literature 226)

BUDGETARY ADMINISTRATION**635. Budgetary and Financial Administration: Budget Formulation (2) Fall**

Th 6-8 beginning Sept. 30. \$14

MESSRS. JUMP, WHEELER, and Specialists

First part of an advanced, two-semester program covering the broad phases of budgetary and financial administration in the Federal Government. Several officials from bureau and department budget offices, and other budgetary and financial organizations will lecture and lead discussions.

The course deals with the pre-appropriation phases of budgeting, including formulation, review, and congressional enactment of the budget. Topics discussed include: history, development, and purposes of budgeting in the United States and other countries; Federal budgetary and fiscal policies in relation to the national economy; the role of budgeting in program formulation; the role of bureaus, departments, Bureau of the Budget, the President and Congress in budgeting; budgetary procedures; content of the Budget, the investment and capital-outlay budgets; review and analysis of budget estimates; budget justifications; legislative-administrative relationships in budgeting. Each student desiring credit is expected to write a short paper on some problem relevant to the course.

Prerequisites: Experience in budgetary or financial administration, courses in public administration, or consent of instructor.

636. Budgetary and Financial Administration: Budget Execution (2) Spring

Th 6-8 beginning Feb. 3. \$14

MESSRS. JUMP, LEWIS, and Specialists

This is the second part of an advanced two-semester course covering the broad phases of budgetary and financial administration in the Federal Government. Several officials from bureaus and department budget offices, and other budgetary and financial organizations, lecture and lead discussions.

This semester deals with the execution of the budget after being enacted by Congress and the relationships of administrative planning and control, accounting, auditing, and financial reporting to budget execution.

Prerequisites: Experience in budgetary or financial administration; courses in government or public administration; or consent of instructor.

637. Governmental Purchasing (2) Spring

F 6-8 beginning Feb. 4. \$14

MESSRS. S. A. SNYDER and KNUDSEN

Designed to give more advanced training to persons who have completed the course in Purchasing Procedure and to enable persons actively engaged in purchasing to be brought up-to-date

on the practices, procedure, economics, and law (from the layman's point of view) of governmental purchasing. Among the topics considered are the organization and management of the purchasing office, public contracts, specification writing, market analysis, and public procurement under wartime conditions. A few leading specialists will be called in to discuss the more specialized phases of procurement.

Federal Purchasing Procedure

(See Office Techniques and Operations 415)

638. Government War Contracts (2) Spring

Tu 6-8 beginning Feb. 1. \$14

MR. NUTTING and Specialists

Designed to give the student an understanding of the various types of government war contracts and the more important factors, legal and economic, that affect the making and performance of such contracts. The impact of Federal and State tax laws, labor legislations, workman's compensation laws, domestic preference laws, priority legislation, and price-control legislation will be stressed. Consideration will also be given to such matters as security against espionage and sabotage, infringements of patents, cost determination, negotiation under cost-plus-fixed-fee contracts, price adjustment (escalation), financing and payment arrangements, and termination of contracts.

Prerequisite: Training or extensive experience in business law, procurement, statistics, or accounting.

FINANCE

See page 64 for a suggested program of study and for the requirements for a Certified Statement of Accomplishment in Accounting.

352A. Principles of Accounting—First half (3) Each semester

M-W 6-7 beginning Sept. 27; Jan. 31. \$18
Laboratory M 7-9 beginning Oct. 4; Feb. 7
Mr. W. H. ROWE assisted by
Mr. BROWNOLD

Elementary principles of accounting; discussion and problems. At the end of the semester students will be prepared to devise the accounting methods necessary for a small business organization, make the necessary entries in the records, draw up statements at the end of the fiscal year, adjust the accounts for accruals, deferred items, depreciation, etc., and close the books.

352B. Principles of Accounting—Second half (3) Each semester

Tu-Th 6-7 beginning Sept. 28; Feb. 1. \$18
Laboratory Tu 7-9 beginning Oct. 5; Feb. 8

MR. MCSHEA

Continuation of first half covering the more advanced principles of accounting; account classifications; the valuation of assets and depreciation policies; manufacturing accounts; partnership accounts; and corporation accounting, particularly the treatment and interpretation of capital stock, surplus, and reserve accounts.

353. Second Year Accounting (3) Year, credit each semester

M 6-9 beginning Sept. 27; Jan. 31. \$18 a semester

MR. FISHER

First semester: Advanced principles of manufacturing accounting, corporation accounting, and valuation as applied to current assets, fixed assets, intangibles, and liabilities, reserves and funds, installment sales.

Second semester: Advanced principles of partnership accounting, including formation, operation, and dissolution; joint ventures; consignments; agencies and branches; consolidated balance sheets and income statements; application of funds; accounting for insolvent and bankrupt concerns; estates and trusts.

Prerequisite: First year accounting or equivalent.

Federal Accounting Procedure

(See Office Techniques and Operations 412)

354. Federal Government Accounting (3) Each semester

W 6-9 beginning Sept. 29; Feb. 2. \$18

MR. QUIGLEY

A review of the development of the accounting system for Federal funds and a detailed study of appropriation, fund, receipts, and governmental corporation accounting. Special emphasis is given to the accounting problems of administrative agencies. The Treasury Department and General Accounting Office relationships to the accounting system are covered. Specialists in their respective fields assist in the course.

Prerequisite: One year of basic accounting, or Federal Accounting Procedure, or one year of experience with the Federal system of accounting.

355C. Federal Government Accounting (3)

Registration at any time. \$18 (and \$5 supplies fee) MESSRS. QUIGLEY and MASON

Principles and practices of accounting in the Federal Government, with emphasis on the uniform system prescribed by the General Accounting Office, including history and background of the accounting and fiscal procedures, organization of general fiscal agencies (Treasury, General Accounting Office, Bureau of the Budget), reporting requirements, and general integration of budgeting and accounting procedures. Especially devoted to the interests and needs of the Department of Agriculture field service.

Prerequisite: One year of basic accounting, or its equivalent. Persons wishing to qualify through experience should forward descriptions of their experience for evaluation.

642. Cost Accounting (3) Fall

Tu 6:30-9:30 beginning Sept. 28. \$21

MR. BACHMANN

A thorough and comprehensive treatment of the principles of cost accounting, together with the methods of their application to specific problems. By means of lectures, textbook study, and problems, full consideration is given to the methods of cost accounting for materials, labor, direct and indirect expenses in their relationship to specific job orders, process and departmental costs, and the control accounts.

Prerequisite: Principles of Accounting.

The Accounting System of the U. S. Gov't.¹ (3) Each semester

Tu 8:20-10:30 beginning Sept. 28; Feb. 8. \$30

MR. BARTELT

643. Auditing (3) Spring

Tu 6-9 beginning Feb. 1. \$21

MR. BACHMANN

The purposes and types of audits are studied. Consideration is given to such problems as the planning and performing of audits, principles and auditing of different types of audits, audit working papers and reports, and responsibility of the auditor.

Prerequisite: Second Year Accounting.

644. Mathematics of Finance (3) Spring

Tu-Th 6-7:30 beginning Feb. 1. \$21

MR. W. H. ROWE

Calculation of compound interest, compound discount, sum of annuities, present value of annuities and perpetuities; determination of annual payments necessary to accumulate sinking funds and to amortize debts by installments and preparation of schedules for such accumulations and amortizations. The valuation of bonds in cases where the yield rate differs from the bond rate and the preparation of schedules for the amortization of premiums or accumulations of discounts on such bonds. Computation of depreciation by the sinking fund method, the fixed percentage of book value method, and other methods, as well as the preparation of schedules for the same is included. Some study is given to life probabilities, and the computation of premiums for the simpler types of life annuities and life insurance. Problems will include those of the type given in C.P.A. examinations.

645. Federal Tax Accounting (3) Fall

Th 6-9 beginning Sept. 30. \$21

To be announced

Federal taxation presented from the accounting viewpoint. Special attention given to income taxation. It is desirable that those admitted to the class have had education or experience in accounting.

[646.] Advanced Accounting Problems

(¹ American University course. See A.U. catalog).

[] Not given 1943-44.

Department of Social Sciences

DEPARTMENTAL COMMITTEE

MR. SARLE, Chairman

MR. ENGLUND

MR. TAEUBER

MR. SELLERS

MR. WAUGH

Note: See page 23 for explanation of course symbols.

ANTHROPOLOGY

[577.] Anthropology of Global Warfare

MR. BELL

[578.] Evolution of Ideas

MR. GRAUBARD

ECONOMICS

328. Principles of Economics (3) Year, credit each semester

Tu-Th 6-7:30 beginning Sept. 28; Feb. 1. \$18 a semester

MR. THOMSEN

Principles of money and banking. Relation between money and credit and price levels and business activity. Government finance. Nature and causes of business cycles. Proposed preventives of and remedies for business depressions. International economic relations. Political-economic "isms."

Principles of Transportation

(See Transportation and Traffic 337)

330. Economic Warfare (3) Spring

Tu-Th 6-7:30 beginning Feb. 1. \$18

MR. WASSERMAN

This study of modern economic warfare begins with an analysis of the circumstances that led to the present conflict; studies in some detail the economic organization, defense and attack methods of the belligerents and their collaborators; examines post-war economic plans for a durable peace. Lectures, class discussion, readings in a selected bibliography of the current literature on the subject.

610. Consumer Cooperation (2) Fall

Tu 6-8 beginning Sept. 28. \$14

MR. TERESHTENKO

Analysis of the role consumer cooperation has played in the social and economic life of Europe, Latin America, and in urban life in the United States of America. After brief study of the evolution of the theory of cooperation, attention will be focused on its application in the fields of credit, housing, health, education, etc. Particular attention will be paid to consumer cooperation in Sweden, Switzerland, and Great Britain, to credit cooperatives in Germany and India, to group health associations in Poland and Yugoslavia, and to industrial cooperatives in China. Emphasis will be placed on cooperatives in countries of primary importance to the United States in the post-war period, and on social implications of consumer cooperation in the post-war economy.

Agricultural Cooperation

(See Agricultural Economics 835)

*579. Research Methodology in Economics (2) Spring

M 8-10 beginning Jan. 31. \$14

MR. WERMEL

This course is designed primarily for the economist and economic statistician who is engaged in economic and statistical research. The aim is to acquaint the students with the application of the basic principles of scientific method to concrete research problems and also with the art of preparing written reports embodying the results of their investigations.

[] Not given 1943-44.

807. International Financial and Trade Policies (2) Fall

Th 6-8 beginning Sept. 30. \$14

MR. ZAGLITS

The course analyzes problems of international commercial and financial policies, particularly possible patterns of such policies under economic conditions that may prevail in the post-war period. The problems discussed include: free trade versus industrial and agricultural protection; dumping and foreign trade subsidies; trade restrictions by tariff versus trade restrictions by quotas, exchange control, and other administrative devices; efforts of the United States trade policy to secure equality of treatment in the face of regional, empire, and other preferences; bilateral versus multilateral trade; stable versus variable exchange rates; international reconstruction policies after this war (critical analysis and discussion of proposals for international monetary stabilization, world clearing systems, international lending, international commodity agreements, etc.).

The course will be valuable to those who are or may be concerned with international policies (tariffs, foreign trade, foreign agriculture, etc.) or with monetary and financial problems; it will also benefit those who expect to go abroad in the service of the United States Government or other institutions.

***809. Price Analysis (3) Spring**

M-W 6-7:30 beginning Jan. 31. \$21

MR. THOMSEN

The analysis of commodity prices and of the supply and demand conditions affecting them. Price forecasting. The application of analytical techniques in handling price problems of government and private business. Agricultural commodities are mostly used for illustrations, but the methods are generally applicable to industrial commodities. This is not a course in statistical methods or economic theory, but in their application to practical problems in the field of prices.

Prerequisites: Principles of Economics and Elementary Statistics.

823. Welfare Aspects of Economic Policy (2) Fall

Th 6-8 beginning Sept. 30. \$14

MESSRS. WAUGH and BEEN

A given economic policy may benefit or harm groups of individuals or society as a whole. Too often economists have been inclined to evade the responsibility of appraising the probable benefits or losses that may result from proposed measures. With governments throughout the world taking a more active hand in directing economic affairs, the economist should be prepared to advise the administrators and legislators on the welfare aspects of policy.

This course will review objective criteria that have been developed in the attempt to measure the social gains or losses resulting from various economic policies. This will include a review of such concepts as producer and consumer surpluses, utility functions and indifference curves, and application of these devices to the analysis of benefits and harm that may result from such things as discriminative pricing, import duties, export subsidies, various forms of taxation, freight rate policies, public utility rates, labor and employment policies, food distribution programs, food rationing, etc. A careful appraisal of the welfare aspects of economic measures will have significance in studying war-time policies, but will be even more important in considering national and international programs for the post-war period.

***824. War and Post-War Food Policy (2) Spring**

Th 6-8 beginning Feb. 3. \$14

MESSRS. WAUGH and ALLEN

This course will examine problems of food supply and distribution confronting the United States during the war and the period of post-war rehabilitation, and will study alternative policies and measures for meeting these problems. Special attention will be given increased demands upon the United States for food supplies during and immediately following the present war. Production adjustments to meet war-time needs will be examined in relation to the efficiency of the use of production resources. The course will review policies that have been followed in connection with agricultural goals, Government procurement of food, food orders, rationing, price ceilings, price supports, incentive payments, subsidies, and various other measures that have been taken to manage food supplies.

Analysis will be made of national and international food policies appropriate to the rehabilitation and post-war periods. Special attention will be given the possibility of international cooperation in food distribution along the lines indicated in the Atlantic Charter and in the United Nations Food Conference. Nutritional aspects of these subjects will be treated in lay language; those participating will not need technical training in nutrition.

[612.] Principles of Insurance

MR. VALGREN

[812.] War and Post-war Financial Problems

MR. GARLOCK

[] Not given 1943-44.

604. Seminar: The Economies of the Nations of Latin America (3) Fall

Tu-Th 6-7:30 beginning Sept. 28. \$21

MR. SARLE

This course is designed to develop an understanding of the economic life, resources, and trade of the countries of Latin America, and the relationships of the economies of these nations among themselves, with the United States, Europe, and Asia. Emphasis will be placed on constructive programs to contribute to economic solidarity of the Americas. Especially qualified lecturers will discuss specific problems. Each student will be expected to select at least one major problem for intensive study and present occasional reports to the seminar.

(See Regional Studies for related courses.)

Money and Banking¹ (3) Each semester

M 8:20-10:30 beginning Sept. 27; Feb. 7. \$30

MR. MANN

Public Finance and Taxation¹ (3) Fall

F 6:10-8:20 beginning Sept. 24. \$30

MR. MANN

Business Cycles and Monetary Theory¹ (3) Fall

Tu 6:10-8:20 beginning Sept. 28. \$30

MR. MANN

Corporation Finance¹ (3) Fall

Tu 8:20-10:30 beginning Sept. 28. \$30

(To be announced)

Industrial Organization and Public Policy¹ (3) Fall

W 6:10-8:20 beginning Sept. 29. \$30

MR. C. D. EDWARDS

AGRICULTURAL ECONOMICS

[580.] Social and Economic History of American Agriculture

MR. E. E. EDWARDS

835. Agricultural Cooperation (2) Spring

Tu 6-8 beginning Feb. 1. \$14

MESSRS. FETROW and HEDGES.

This course includes the history, philosophy, and economic concepts of the cooperative movement; and study and evaluation of the major developments in this country of various types of marketing, purchasing, and service associations. These will be approached through actual case situations. Emphasis will be placed on the possible role of cooperatives in the post-war period.

Consumer Cooperation

(See Economics 610)

581. Comparative World Agriculture (3) Spring

Tu-Th 6-7:30 beginning Feb. 1. \$21

MR. WHIPPLE

A survey of countries of strategic agricultural importance including France, Germany, Denmark, Italy, Russia, the Danubian countries, China, India, Japan, Australia, Argentina, and Canada. Each country will be studied in terms of climate, topography, soils, types of farming regions, crop and animal enterprises, markets and transportation, foreign trade, and probable position in the post-war agricultural picture.

581C. Comparative World Agriculture (3)

Same as 581. Registration at any time. \$21 (and \$5 supplies fee)

MR. WHIPPLE

¹ American University course. See A.U. catalog).

[] Not given 1943-44.

332. The Department of Agriculture—Its Origin, Structure, and Functions (2) Fall

W 6-8 beginning Sept. 29. \$12

MR. HARDING

This course is designed to acquaint the student with the gradually developing necessity for governmental aid to agriculture, as technology progressed in the United States, and as farmers became part of our competitive commercial enterprise. Environmental factors in reality forced Federal Government action here via public pressure exerted on the Congress. The evolution and growth of the Department of Agriculture, and the elaboration of its structure and functions, as Congress placed additional responsibilities on it, will be traced from its origins in unorganized and uncoordinated activities in Colonial times and up to 1836, when work formally began in the Patent Office, to the complex and far-reaching institution of today. Emphasis will be placed upon the manner in which governmental agencies arise out of patent necessity, develop, proliferate, and undergo transformation and reorganization under the impulse of environmental forces and changing national and world conditions.

332C. The Department of Agriculture—Its Origin, Structure, and Functions (2)

Same as 332. Registration at any time. \$12 (and \$5 supplies fee)

MR. HARDING

582. Governmental Services in Marketing (2) Fall

W 6-8 beginning Sept. 29. \$14

MR. NEWELL

Major emphasis will be placed upon the agricultural marketing services (crop reporting, market news, grading and standardization, etc.) conducted by the Department of Agriculture. The various services will be reviewed in relation to some of the developments in agricultural production, followed by a discussion of the place of marketing services in the marketing and distribution process. Prerequisite: Principles of marketing, or equivalent, or experience in marketing.

591. Marketing Regulatory Activities in the Department of Agriculture (2) Spring

W 6-8 beginning Feb. 2. \$14

MR. NEWELL

This course will follow the fall term on marketing services. The first part of the course will be devoted to a review of the developments of regulatory activities as they relate to marketing of agricultural products. Discussion will center around some of the more important legislation and recent developments with respect to wartime regulatory activities. The subject will be dealt with mainly from the standpoint of the economic implications of the regulatory work.

[590.] Warehousing

MR. AUSTIN

[584.] Production Economics

MESSRS. S. E. JOHNSON and GOODSELL

[585.] Farm Management

MESSRS. S. E. JOHNSON and GOODSELL

331. Current Land Policies (2) Spring

Th 6-8 beginning Feb. 3. \$12

MESSRS. V. W. JOHNSON and TIMMONS

Discussion of current land problems and policies in the United States and various foreign countries; land use control programs; public land management policies; tenure reforms; government land programs to meet war problems.

***586. Land Economics (3) Fall**

Tu-Th 6-7:30 beginning Sept. 28. \$21

MR. V. W. JOHNSON

A survey of economic principles governing utilization of major land types, including an appraisal of present land resources and future need for various types of land and land uses, traditional practices and customs that affect land use, private and public land ownership and tenancy

[1 Not given 1943-44.

relationships, problems of new settlement, land income under different conditions of ownership and management, and of various State and local measures for the direction and control of land use and occupancy.

587. Seminar in Land Economics Research (2) Spring

Tu 6-8 beginning Feb. 1. \$14

MR. V. W. JOHNSON

Development of land economics research in the United States. Analysis of selected studies in terms of objectives, approach, methods, conclusions.

[588.] Agricultural Finance

MESSRS. GARLOCK and HORTON

[589.] Cotton Marketing

MR. J. W. WRIGHT

Statistics of Crop Estimating

(See Mathematics and Statistics [737])

[808.] Principles of Agricultural Marketing

MR. BEEN and Specialists

Statistical Methods in Biology and Agriculture

(See Mathematics and Statistics 513C)

Cotton Classing

(See Engineering and Mechanical Arts [191])

War and Post-War Food Policy

(See Economics 824)

LABOR ECONOMICS

***592. Farm Labor Problems (3) Spring**

M-W 6-7:30 beginning Jan. 31. \$21

MR. HAM

This course deals with the economic and social relationships of labor, both farm family and hired, in different type-of-farming areas, on farm enterprises of varying size, and at different times in the history of American agriculture. Factors affecting the supply of farm labor, the demand for it, and its remuneration are analyzed. Attention is given to seasonal and migratory workers, and to the present position of the "hired hand" on the "agricultural ladder." Methods of improving the lot of agricultural laborers are considered, also the impact of the war, here and abroad upon their status.

***593. Labor and Social Legislation (3) Spring**

M 8-10:30 beginning Jan. 31. (18 weeks) \$21

MR. ZISKIND

This course deals with the problems of the individual worker and the progress of social legislation designed to improve his labor standards. It reviews the legislation on child and woman labor, safety and health, accident compensation, wage payment and collection, minimum wages, maximum hours, unemployment insurance, and old-age pensions. Attention will be given the administrative techniques of the Social Security Board, the Railroad Retirement Board, and the Wage-Hour Division of the Department of Labor, as well as the various State labor departments.

594. Settlement of Labor Disputes (3) Spring

W 8-10:30 beginning Feb. 2. (18 weeks) \$21

MR. ZISKIND

An analysis of strikes and lockouts, a study of conciliation and arbitration, and a survey of private-industry adjustment schemes. Special attention will be given the work of the United States Conciliation Service, the National War Labor Board, State Boards of Mediation and Arbitration, and the impartial machinery of the garment, printing, and maritime industries.

[] Not given 1943-44.

595. Organized Labor and the Law (3) Fall

M 8-10:30 beginning Sept. 27. (18 weeks) \$21

MR. ZISKIND

This course is designed to develop an understanding of the functioning of law and government agencies in the field of labor relations. It will present an analysis of statutes and judicial decisions on the organization of trade unions, the incidents of union membership, collective bargaining, strikes and lockouts, picketing, boycotts, blacklists, conciliation and arbitration, and trade union responsibility. Attention will be given the administrative procedure of the National Labor Relations Board and the State labor relations boards.

596. Labor and the War Program (3) Fall

W 8-10:30 beginning Sept. 29. (18 weeks) \$21

MR. ZISKIND

A study of the adjustments made in labor relations and labor standards during the last war and the present. Special attention will be given administrative organization, production planning, conversion unemployment, recruitment and placement, job training, overtime hours, wage stabilization, safety practices, union participation, strikes, minority-groups employment and postwar labor programs.

Labor and the Economic Order¹ (3) Each semester

W 6:10-8:20 beginning Sept. 29; Feb. 9. \$30.

MR. PECK

ECONOMIC THEORY

597. History of Economic Thought (3) Year, credit each semester

M-W 6-7:30 beginning Sept. 27; Jan. 31. \$21 a semester

MR. WASSERMAN

An examination of the principal economic theories from Greek antiquity to the present time in the light of the institutions, customs, and practices that conditioned them.

***810. Economics of Imperfect Competition (3) Year, credit each semester**

W 6:30-9 beginning Sept. 29; Feb. 2. (18 weeks) \$21 a semester

MR. WERMEL

This course will commence with a critical reexamination of basic premises underlying the traditional theory of price determination, as an introduction to an intensive study of newer theoretical techniques, developed recently, for the analysis of prices under conditions that fit neither assumptions of "perfect competition" nor of "pure monopoly" and that have been described as conditions of "monopolistic" or "imperfect" competition. In the second semester, the usefulness and applicability of this theoretical apparatus will be tested by a study of actual institutional practices, of price determination in specific markets in industries such as rubber tires, agricultural implements, drugs, meat packing, fertilizer, canning, etc., where admittedly neither "perfect competition" nor "pure monopoly" prevails.

***811. Post-War Economic Problems (2) Each Semester**

Sec. I. M 6-8 beginning Sept. 27; Jan. 31. \$14 a semester

MR. WERMEL

Sec. II. Th 5-7 beginning Oct. 21 (Fall only); Social Security Board, Equitable Building, Baltimore.

This course is designed to furnish the necessary theoretical background for the understanding and discussion of plans for post-war economic reconstruction. Such theoretical concepts as gross national product, national income, productivity of labor, hours of work, labor turnover, price trends, wages, fiscal policy, control of prices, international trade, etc., will be discussed. The method of developing economic forecasts or perspectives on the basis of systems of assumptions related to above factors will be examined.

Contemporary Economic Thought¹ (3) Year, credit each semester

Th 6:10-8:20 beginning Sept. 23; Feb. 10. \$30 a semester

MR. PIQUET

(¹ American University course. See A.U. catalog).

Contemporary Economic Thought¹ (3) Year, credit each semester

Th 6:10-8:20 beginning Sept. 23; Feb. 10. \$30 a semester

MR. PIQUET

ECONOMIC GEOGRAPHY

613. Economic Geography (3) Fall

M-W 6-7:30 beginning Sept. 27. \$21

MR. WHIPPLE

A survey of man's occupation and utilization of the earth. Important occupations of man such as industry, forestry, fishing, are studied as developed in the major geographic regions of the world. An important element is a survey of the major agricultural regions of the world and the part geographic environment has played in their development. The effects of geography on world trade and population are also considered in terms of the present dynamic world situation and the immediate post-war period.

***614. Economic Geography of Europe (2) Fall**

F 6-8 beginning Oct. 1. \$14

MR. WHIPPLE

A seminar course dealing with the human and economic geography of Europe. A survey of man's occupation and utilization of the resources of the continent will be made including agriculture, forestry, fishing, manufacturing, and other important occupations of the continent. An important element will be a survey of probable social-economic post-war adjustments.

(See also Czech, French, German, Italian, Polish, Portuguese, Russian—Languages and Literature.)

(See Regional Studies for related courses.)

POLITICAL SCIENCE AND HISTORY

Introduction to Public Administration

(See Public Administration 344)

583. Problems in Government and Administration (2) Fall

W 6-8 beginning Sept. 29. \$14

MR. LATHAM

A detailed study of major problems of government, particularly on the administrative side, and especially as they manifest themselves in the national government of the United States. Topics include: theory of organization and doctrines of responsibility; public budgeting and financial control; administrative legislation and adjudication; administrative areas; governmental reorganization; governmental corporations; and problems of public service personnel administration.

[580.] Social and Economic History of American Agriculture

[343.] Congressional Procedure

MR. RIDDICK

[339.] Recent American History

MR. GEWEHR

608. World Politics (2) Fall

Tu 6-8 beginning Sept. 28. \$14

MR. GEWEHR

A survey of world affairs and international relations. Such topics will be considered as the origins of the World War of 1914-18, the Versailles Conference and the treaties that brought no peace; revolution in Germany and Russia; the conditions that gave rise to Mussolini and Hitler; the nature of Nazism, Fascism and Communism; the breakdown of the peace machinery; the war; basic issues in the Far Eastern situation; problems and prospects of Pan-Americanism.

813. Contemporary Political Thought (2) Fall

Tu 6-8 beginning Sept. 28. \$14

MR. VITON

Beginning with a review of the development of liberal and democratic thought at the end of the Eighteenth Century, the course traces the growth of the anti-rational, anti-individualistic,

¹ American University course. See A.U. catalog).

[] Not given 1943-44.

and romantic reaction after the French Revolution, and the socio-economic changes with which liberalism seemed unable to cope. The development of modern political ideologies is traced by analyzing the ideas and influence of outstanding political thinkers and technological changes which stimulated reconstruction of governmental mechanisms. Contributions of Rousseau, the absolutist thinkers of Germany (Fichte, Hegel, Nietzsche), the German militarists and the romantic racialists (Gobineau, Chamberlain), and the expounders of the legitimacy of violence (Sorel, the syndicalists and the anarchists) to the development of Fascist doctrines after 1920 will be studied, as well as the challenge to liberalism by socialist and communist thought and methods developed by liberal democracy in England and the United States to meet these challenges.

607. Problems of International Organization (2) Spring

W 6-8 beginning Feb. 2. \$14

MR. VITON

After a brief survey of the rise of the modern national state system and the conflict in Western thought between nationalism and internationalism, the League of Nations and the other international institutions established at the end of the last war, attention will be focused on the chief political, social, and economic problems which will confront the victorious democracies at the end of the war. Special emphasis will be placed on the problems of the Pacific and Asia. The problems of immediate relief and reconstruction of conquered and occupied areas, and methods now being devised in Britain, the United States, and by exiled governments for dealing with those problems. Contemporary theories of federal union and reconstruction of the League of Nations. The problem of control of national military forces; theories of international military organizations. The nature of the colonial problem, its significance and the possible solutions now being devised. Problems of surplus population, international trade, raw materials and industrialization of "backward" areas. The problem of international security, arbitration of disputes and world economic social planning. Minority and imperialist problems of the Near East. The place of Soviet Russia in the new order in the Pacific, its policies and influence on the peace settlement, and future relations with America. The new balance of power in the Pacific and the role of the United States.

601. Problems of Nationalism in the East and the West (2)

Spring

W 6-8 beginning Feb. 2. \$14

MR. GOGATE

A critical historical survey of the trends in national consciousness in Europe and Asia as seen by a Hindu political scientist. Special reference will be made to the theories about Sovereign Rights, wars of expansion, Iridentist wars, political, economic and religious imperialisms and democratic plans for regional federations of cooperative commonwealths and internationalism. The viewpoints of the leading thinkers will be discussed.

603. The Government and Economic Structure of Britain and the Empire (2) Fall

W 6-8 beginning Sept. 29. \$14

MR. VITON

The course will review the development of political and economic forces within the British Empire and Commonwealth of Nations, analyzing effects on the international status of the various parts of the Empire, and on their relations with Britain. Special emphasis will be placed on economic, social and political policies of Britain since the outbreak of the war, organization of the Empire for prosecution of total war and effect of recent economic and political developments on the future of the British Empire.

(See Regional Studies for related courses.)

PSYCHOLOGY

342. The Conditions of Personality Growth (2) Fall

Tu 6:30-8:30 beginning Sept. 28. \$12

Lt. COMDR. KELLY

Your mind is the most extensive physical aspect of your total self. The chief discoveries of medical and dynamic psychology as to the growth of the mind, the development of inter-personal relationships, and the attainment of natural terms with our surroundings, the basic meanings underlying mental illness and mental health, our circumstances as they influence our directions. What medical psychology finds to be "Big" and "Little." What to do to generate mental power? Government is applied psychology; good government is applied healthy psychology. Effective citizenship depends entirely upon mental health.

[830.] Rural Social Psychology

MR. TAYLOR

[] Not given 1943-44.

822. Social Psychology (2) Spring

Tu 6-8 beginning Feb. 1. \$14

MESSRS. TAYLOR, BELL, and RAPER

A general study of the basic features of social behavior, the psychological foundations of social behavior, and personality and social behavior; consideration of attitudes, public opinion and propaganda, mobs, crowds, and audiences. Special attention will be given to such practical problems as personal ascendancy, leadership, and personnel management.

Psychology of Management*(See Public Administration 625)***Psychological Aspects of Personnel Administration***(See Public Administration 837)***Psychometric Methods and Theory***(See Mathematics and Statistics 730)***Techniques of Interviewing and Questionnaire Construction***(See Mathematics and Statistics 736)***PUBLIC LAW****Administrative Law and Procedure***(See Public Administration 617)***Layman's Introduction to Public Law***(See Public Administration [345])***Organized Labor and the Law***(See Labor Economics 595)***Legal Aspects of Investigation—Criminal Evidence and Procedure***(See Public Administration 663)***Business Law¹ (3) Fall**

Tu 6:10-8:20 beginning Sept. 28. \$30

MR. YOUNG

REGIONAL STUDIES

These regional orientation courses cut across traditional academic lines. They are designed to give students: (1) a basic knowledge of the region involved, the pattern of anthropological, economic, geographical, historical, political, and social factors which have gone into the development of the region and play important roles in its life today; (2) the "feel" of the region—the customs, religions, folkways, prejudices, and other aspects of life in the countries included. These factors are discussed in practical terms as they are reflected in today's problems in the region. Also discussed are the prospective situations of the countries in the region during the post-war period.

¹ American University course. See A.U. catalog).

The regions listed are not mutually exclusive in all cases, and in some instances emphasis is on particular countries within the region or on certain aspects of life within those countries. In such cases this fact is noted in the course description.

These courses will be useful to those who plan to engage in relief and reconstruction work during or after the war, as well as to others whose work in this country touches at some point on the regions covered. Under each course, reference is made to related language courses. It is suggested that students refer also to other courses of a related nature, (such as Post-War Economic Problems, International Organization, War and Post-War Food Policy, World Politics, Comparative World Agriculture, Economic Geography of Europe, etc.), particularly in this department, and to courses offering training in specialized professional fields.

598. The Orient (2) Fall

Tu 6-8 beginning Sept. 28. \$14

MR. GOGATE

(See also Chinese, Hindu, Japanese.)

602. The Southwest Pacific (2) Spring

W 6-8 beginning Feb. 2. \$14

MR. TSIANG

Principally British Malaya and the Netherlands East Indies.
(See also Chinese, Dutch, Malay.)

609. The Far East (2) Spring

Th 6-8 beginning Feb. 3. \$14

MR. GEWEHR

(See also Chinese, Japanese.)

605. The Philippines (2) Year, credit each semester

M 6-8 beginning Sept. 27; Jan. 31. \$14 a semester

MR. RUIZ

With special attention to cultural influences of India, China, Japan, and Arabia; to the place of Latin culture in Filipino folkways and mores; to cultural ties between the Philippines and the United States.
(See also Spanish.)

[606.] Social Problems of the Philippines in the Post-War Period

MR. RUIZ

***600. The Middle East (2) Fall**

M 6-8 beginning Sept. 27. \$14

MR. TANNOUS

Particular attention paid to agricultural rehabilitation. (See also Arabic, French.)

599. The Balkans (2) Spring

F 6-8 beginning Feb. 4. \$14

MR. WHIPPLE

Special emphasis on rural and agricultural problems and indicated solutions. (See also Czech, French, German, Polish, Russian.)

814. Latin America (2) Year, credit each semester

M 6-8 beginning Sept. 27; Jan. 31. \$14 a semester

MESSRS. TAYLOR, LOOMIS,
and T. L. SMITH

(See also Portuguese, Spanish.)

[] Not given 1943-44.

612. Japan (2) Spring
W 6-8 beginning Feb. 2. \$14

MR. YOSHIOKA

La America Latina y los Estados Unidos
(See Sociology 611)

The Government and Economic Structure of Britain and the Empire
(See Political Science and History 603)

SOCIOLOGY

Latin America

(See Regional Studies 814)

611. La America Latina y los Estados Unidos (2) Year, credit each semester

M 8-10 beginning Sept. 27; Jan. 31. \$14 a semester

MR. GREEN

Lectures and discussions in Spanish.

This course provides an opportunity to achieve greater facility in Spanish, while acquiring useful and interesting information on the life of the Latin-American countries and their relations with the United States.

The first semester analyzes racial, geographic, economic, and political forces that have shaped Latin-American developments; and surveys important contributions of Latin-American literature, art, music, social legislation and other spheres of human activity. The second semester embraces fundamental trends and influences for and against inter-American friendship, from earliest times to the present day. It describes official and non-governmental inter-American relations, presents problems and indicates opportunities facing the Americas today. Registration is limited to students who have had the requisite instruction and practice in Spanish. Those who are in doubt as to their adequacy in this regard are advised to confer with the instructor before registering.

[815.] Cultural Regions of the United States

MR. TAYLOR

[816.] The Evolution of American Rural Life

MR. TAYLOR

***817. Rural Community Organization (2) Fall**

M 7:30-9:30 beginning Sept. 27. \$14 MESSRS. LOOMIS and ENSMINGER

This course provides an opportunity for those interested in the general field of social organization to analyze the techniques communities have used in organizing their local forces to deal with such problems as food production, soil conservation, health, recreation, and religion. Consideration will be given to methods and techniques employed by Federal and State agencies in securing participation of the local communities in their respective programs. Regional variations and similarities in social structure will be considered.

Particular attention will be given to national agencies related to the war effort and the reaction of local communities to them. The functioning of the neighborhood leader system and the block organization will be treated. Relative features of the functioning of American social organization will be emphasized by consideration of problems confronted by agencies operating in other countries. Knowledge gained from social organization in the United States and elsewhere will be related to problems which American experts must confront in conquered territories.

[818.] Rural Population Trends

MR. TAEUBER

[819.] Contemporary Social Theory

MR. LOOMIS

(See Regional Studies for other courses.)

[] Not given 1943-44.

Sampling in Social and Economic Surveys
(See Mathematics and Statistics 732)

Population Statistics

(See Mathematics and Statistics 729)

[606.] Social Problems of the Philippines in the Post-War Period

(See Regional Studies for other courses.)

MR. RUIZ

Introduction to Social Security¹ (3) Fall

W 6:10-8:20 beginning Sept. 29. \$30

MR. WEIGERT

The Future of Social Security¹ (3) Fall

Th 6:10-8:20 beginning Sept. 23. \$30

MR. WEIGERT

Population Trends: Analysis and Interpretation¹ (3) Fall

F 6:10-8:20 beginning Sept. 24. \$30

MR. LORIMER

TRANSPORTATION AND TRAFFIC

337. Principles of Transportation (3) Each semester

Tu 6-9 beginning Sept. 28; Feb. 1. \$18

MR. SNELL

The course is designed to acquaint the student with the main facts about the transportation system of the United States, its significance, and its operation. Consideration will be given to the role of transportation in bridging the gap between production and consumption, and other facilities and services offered; rate making, theory and practice; classification and tariffs, shipping procedures and papers, and the organization and business methods of carriers. Throughout, attention will be given to the influence and importance of government regulations, particularly of rates and services.

615. Freight Rates (3) Each semester

M 6-9 beginning Sept. 27; Jan. 31. \$21 MESSRS. G. L. WILSON and GRUBER

The principles and practices of carriers in domestic interstate commerce in freight rate-making for those engaged in transportation rates and regulated traffic work with Government agencies. It will include freight traffic territories of the United States, classification, operation, and traffic association; economic principles of freight rate-making and railroad rate-making procedure; freight tariff publication; freight rate structures of the chief traffic territories; trans-continental freight rate structure, and import and export rates; domestic water transportation freight rates; railway express rates and freight forwarder rates.

806. Wartime Transportation Problems (2) Each semester

W 6-8 beginning Sept. 29; Feb. 2. \$14

MR. MILLER

This course is designed to give an insight into major problems now faced by the industry, with emphasis upon trends and controls. After a brief survey of the development of the various agencies of transport, with emphasis upon developments since 1920, a study will be made of particular problems. Among these will be competition, coordination, consolidation, labor, and finance. Regulation will be examined and the work of the Interstate Commerce Commission and Civil Aeronautics Board scrutinized; stress will here be placed upon evolution of policies and trends. Consideration will be given to domestic transport in war, including the record of the Office of Defense Transportation. Finally, various proposals urged as partial or complete "solutions" of the Nation's transportation problem will be weighed and possible courses of action suggested.

¹ American University course. See A.U. catalog).

Warehousing

(See Agricultural Economics 590)

826. Traffic Management (3) Each semester

Th 6-9 beginning Sept. 30; Feb. 3. \$21

MR. G. L. WILSON

A course designed to acquaint transportation students with the principles and practices of traffic management from both governmental and commercial points of view. It includes freight rate, administration, and procedure; preparation and filing of freight clauses; routing of traffic; tracing and expediting; and procedure before carrier organizations and government regulatory commissions. Current developments (ODT procedure, etc.,) in the field of traffic are stressed.

[825.] Administrative Control of Aviation under the Civil Aeronautics Act of 1938

MR. BROWN

[827.] Commercial Air Transportation**[820.] Seminar on International Aviation****[821.] International Air Transportation**

MR. BROWN

Basic Problems in Transportation and Communication¹ (3)

Each semester

Th 6:10-8:20 beginning Sept. 23; Feb. 10. \$30

MR. HOMBERGER

Economic Geography and Transportation of Latin America¹

(3) Spring

M. 6:10-8:20 beginning Feb. 7. \$30

MR. HOMBERGER

[] Not given 1943-44.

(¹ American University course. See A.U. catalog).

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